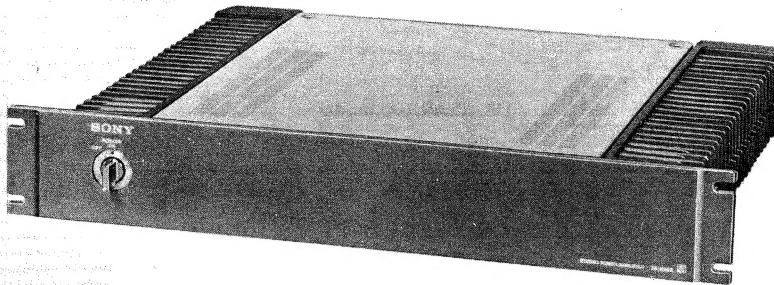


TA-N86B

US Model
Canadian Model
AEP Model
UK Model



STEREO POWER AMPLIFIER

SPECIFICATIONS

GENERAL

| | |
|---------------------|--|
| Power Requirements: | 120 V ac, 60 Hz (US, Canadian model) 220 – 240 V ac, 50/60 Hz (AEP, UK model) |
| Power Consumption: | 210 W (US model) 510 VA (Canadian model) 450 W (AEP, UK model) |
| Dimensions: | Approx. 480 (w) x 80 (h) x 380 (d) mm 18 ⁷ / ₈ (w) x 3 ¹ / ₈ (h) x 15 (d) inches Including projecting parts and controls |
| Weight: | Approx. 8.0 kg, 17 lb 10 oz (net) Approx. 8.6 kg, 18 lb 15 oz (in shipping carton) |

POWER AMPLIFIER SECTION


Continuous RMS Power Output:
(US, Canadian model)

Class A and B Operation: with 8 Ω loads, both channels driven,
from 20–20,000 Hz, with no more
than 0.007 % total harmonic distortion


Mono Amp Operation: with 8 Ω loads, from 20–20,000 Hz,
with no more than 0.015 % THD

| | |
|---------|--|
| Class A | 18 W + 18 W |
| Class B | 80 W + 80 W (8 Ω) 90 W + 90 W (4 Ω) |
| Mono | 180 W |

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND  MARK ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT
À LA SÉCURITÉ !

LES COMPOSANTS IDENTIFIÉS PAR UN TRAMÉ ET UNE MARQUE  SUR LES DIAGRAMMES SCHEMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DES SUPPLÉMENTS PUBLIÉS PAR SONY.

— Continued on page 2 —

SONY[®]

SERVICE MANUAL

TA-N86B

(AEP, UK model)
Less than 0.007 % THD, both channels driven simultaneously, 8 Ω
(In mono amp operation: less than 0.015 %, 8 Ω)

| | 20 Hz — 20 kHz |
|---------|--|
| Class A | 18 W + 18 W |
| Class B | 80 W + 80 W (8 Ω) 60 W + 60 W (4 Ω) |
| Mono | 120 W |

According to DIN 45500

| | |
|---------|-------------|
| Class A | 18 W + 18 W |
| Class B | 80 W + 80 W |
| Mono | 120 W |

Damping Factor: 70 (1 kHz, 8 Ω)

Harmonic Distortion:

| | | 20 Hz—20 kHz | 5 Hz—50 kHz |
|----------------|---------|--------------|-------------|
| Rated output | Class A | 0.007 % | 0.02 % |
| | Class B | 0.007 % | 0.02 % |
| | Mono | 0.015 % | 0.07 % |
| ½ rated output | Class A | 0.0025 % | 0.005 % |
| | Class B | 0.0035 % | 0.007 % |
| | Mono | 0.008 % | 0.03 % |
| 1W output | Class A | 0.001 % | 0.006 % |
| | Class B | 0.003 % | 0.007 % |
| | Mono | 0.008 % | 0.025 % |

Intermodulation (IM)
Distortion:
(60 Hz : 7 kHz = 4 : 1)

| | | |
|----------------|---------|---------|
| Rated output | Class A | 0.004 % |
| | Class B | 0.004 % |
| | Mono | 0.005 % |
| ½ rated output | Class A | 0.002 % |
| | Class B | 0.003 % |
| | Mono | 0.004 % |
| 1W output | Class A | 0.002 % |
| | Class B | 0.003 % |
| | Mono | 0.004 % |

Power Bandwidth (IHF): 5 Hz — 45 kHz (Class B, 8 Ω, 0.007 %)
5 Hz — 60 kHz (Class A, 8 Ω, 0.007 %)
5 Hz — 30 kHz (Mono, 8 Ω, 0.015 %)

Frequency Response: DC — 200 kHz +0 dB (DIRECT input)
-1 dB
7 Hz — 200 kHz +0 dB (C COUPLED input)
-1 dB

S/N Ratio: Greater than 120 dB, short-circuited input

Residual Noise: 25 μV (8 Ω, network A)

Inputs:

| | Gain | | | Impedance | | |
|--|---------|---------|---------|-----------|---------|-------|
| | Class A | Class B | Mono | Class A | Class B | Mono |
| DIRECT | 27.4 dB | 27.4 dB | 33.4 dB | 50 kΩ | 50 kΩ | 50 kΩ |
| C COUPLED (3 Hz cutoff frequency 6 dB/oct slope) | | | | | | |

Outputs: SPEAKER terminals
Class B: Accept speakers of 4 — 16 Ω
Class A and Mono amp: Accept speakers of 8 — 16 Ω

0 dB = 0.775 V

MODEL IDENTIFICATION

Specification Label
US model

| | |
|---------------------------------------|-------------|
| SONY STEREO POWER AMPLIFIER | |
| MODEL NO. | TA-N86B |
| SERIAL NO. | |
| AC 120 V | 60 Hz 210 W |
| MADE IN JAPAN | |

Canadian model

| | |
|---------------------------------------|--------------|
| SONY STEREO POWER AMPLIFIER | |
| MODEL NO. | TA-N86B |
| SERIAL NO. | |
| AC 120 V | 60 Hz 510 VA |
| MADE IN JAPAN | |

AEP, UK model

| | |
|---------------------------------------|----------------|
| SONY STEREO POWER AMPLIFIER | |
| MODEL NO. | TA-N86B |
| SERIAL NO. | |
| 220 ~ 240 V | 50/60 Hz 450 W |
| MADE IN JAPAN | |

SERVICING NOTES

1. REPLACEMENT OF THE TRANSFORMERS IN THE PULSE-LOCKED POWER-SUPPLY CIRCUIT

The lead wire arrangement for each of T601-603 in the inverter circuit are shown in Figs. 1 and 2.

As the repair parts, T603 is formed by an iron core and a coil winding, but T601 and T602 are only iron core. Thus, if the coils are defective, arrange a new transformers as shown in Fig. 1. Note that the lead lengths must be exact. Also wind the coil carefully.

The lead wires (5) to (8) are as follows:
• lead wire length: (7) longer than (6)

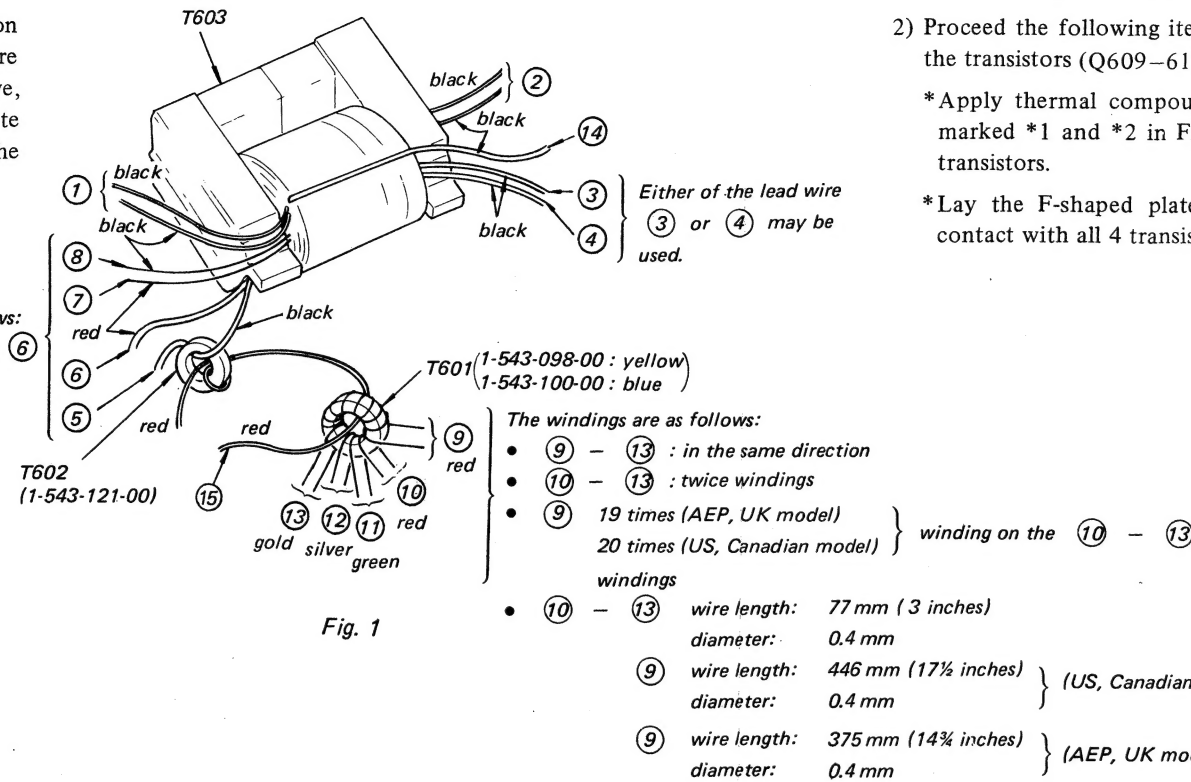
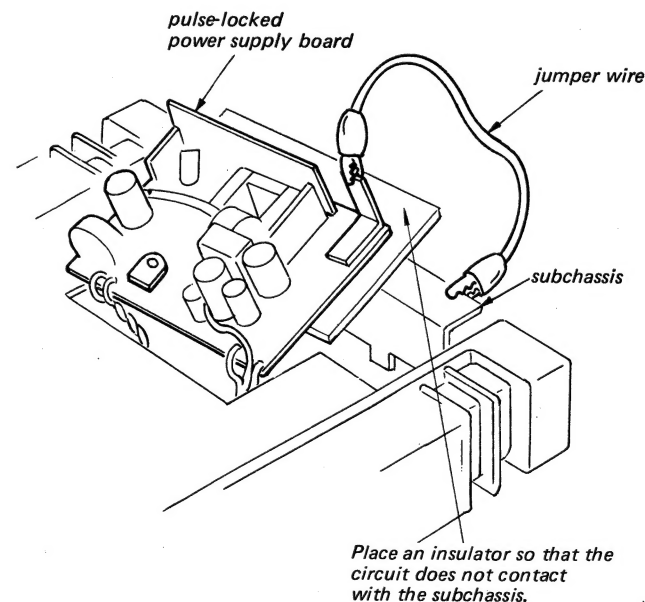


Fig. 1

2. PULSE-LOCKED POWER SUPPLY BOARD REPAIRING

This set has a pulse-locked power-supply circuit which is quite different from a conventional power-supply circuit. The pulse-locked power-supply directly rectifies and smooths the ac input power to produce the higher dc voltages required in the power supply circuit. When servicing this set, note the following.

- 1) To prevent unwanted radiation due to pulse signals in the pulse-locked power-supply circuit, the pulse-locked power-supply board is shielded by the aluminum diecast box.
- 2) The negative circuit of the secondary rectifier in the pulse-locked power-supply circuit is grounded by screws in the aluminum diecast box. When checking the pulse-locked power-supply board out of the box, use a jumper wire as shown.



3. INVERTER CIRCUIT TRANSISTOR REPLACEMENT (Q609-612)

- 1) Be sure that there are no bits of solder and wire ends on the places marked *2 in Fig. 3.
- 2) Proceed the following items surely when replacing the transistors (Q609-612).

*Apply thermal compound coat to the positions marked *1 and *2 in Fig. 3 before mounting the transistors.

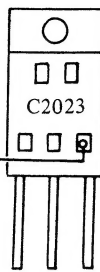
*Lay the F-shaped plate flat to ensure uniform contact with all 4 transistors (see Fig. 4).

AEP, UK model

Q609-612 (8-729-302-31 8-729-302-32)

2SC2023-R --- R
2SC2023-O --- O

hFE rank



Note: When replacing Q609-Q612 in the pulse-locked power-supply circuit, use those which have the same hFE ranks.

US, Canadian model

Q609-612 8-729-308-72

2SC1968D-O --- O

hFE rank

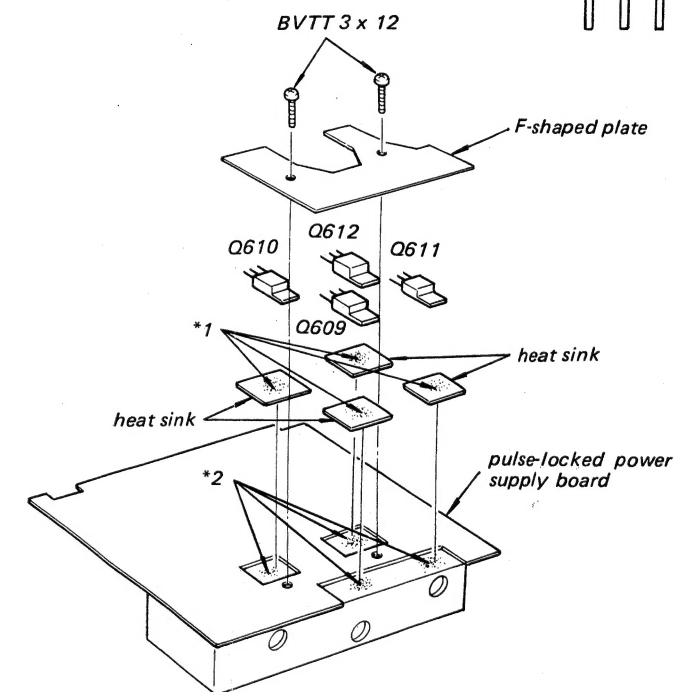
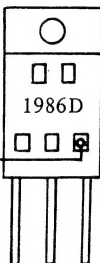


Fig. 3

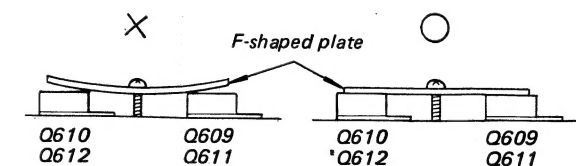


Fig. 4

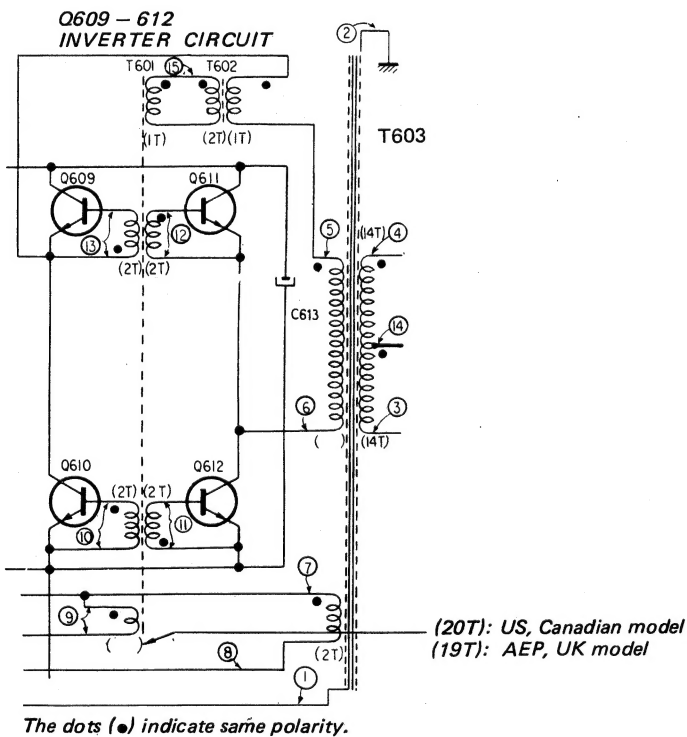


Fig. 2

SECTION 1 OUTLINE

1-1. CIRCUIT DESCRIPTION

[Switching of Class-A and Class-B Amplifiers]

The switching between the class-A and the class-B amplifiers is done by switching the bias voltage of the amplifier.

1. For the class-A amplifier, Q122 and Q123 (Q222 and Q223) are turned off by operating the reed relay RY101 (RY201). Therefore, the bias voltage for the class-A amplifier is determined by RT103 (RT203). The

B voltage is switched by RY601 to that for the class-A amplifier.

2. For the class-B amplifier, the reed relay RY101 (RY201) do not operate. RT103 (RT203) is short-circuited because Q122 and Q123 (Q222 and Q223) are turned on. As a result, the bias voltage for the class-B amplifier is determined by RT102 (RT202).

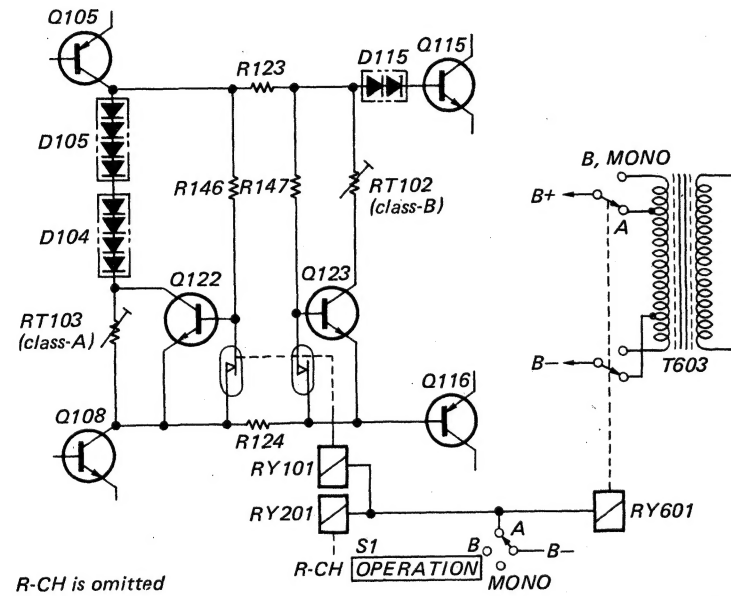


Fig. 1-1.

[MONO Operation]

The left and right channel amplifiers are connected and operated in series (BTL) as shown in Fig. 1-2.

Note that the output forms a balanced push-pull circuit, thus the output power becomes approximately double. The balanced output is obtained by using the original power amplifier input-output phase inversion and inserting a load in series between the each output hot side.

Thus, same but opposite phase signal is supplied to the left and right channel power amplifier inputs simultaneously. As a result, the power applied to the load is doubled.

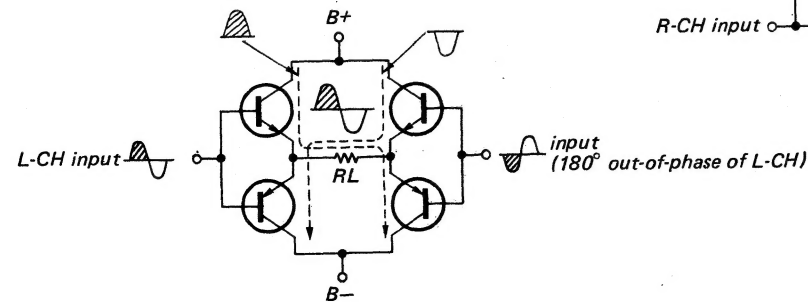


Fig. 1-2.

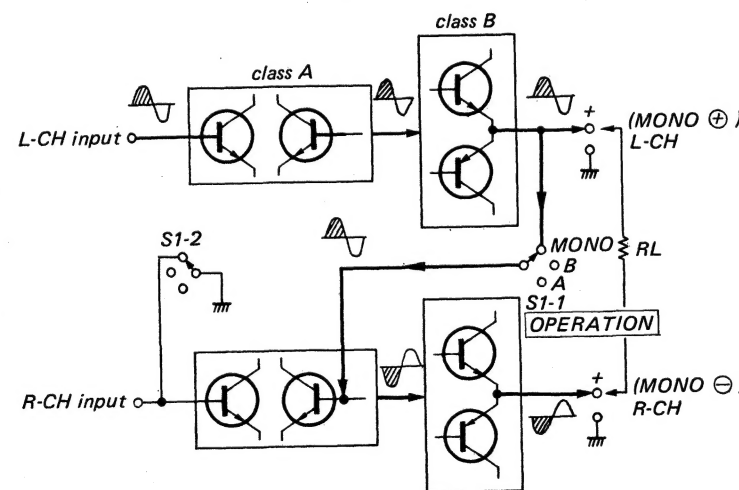
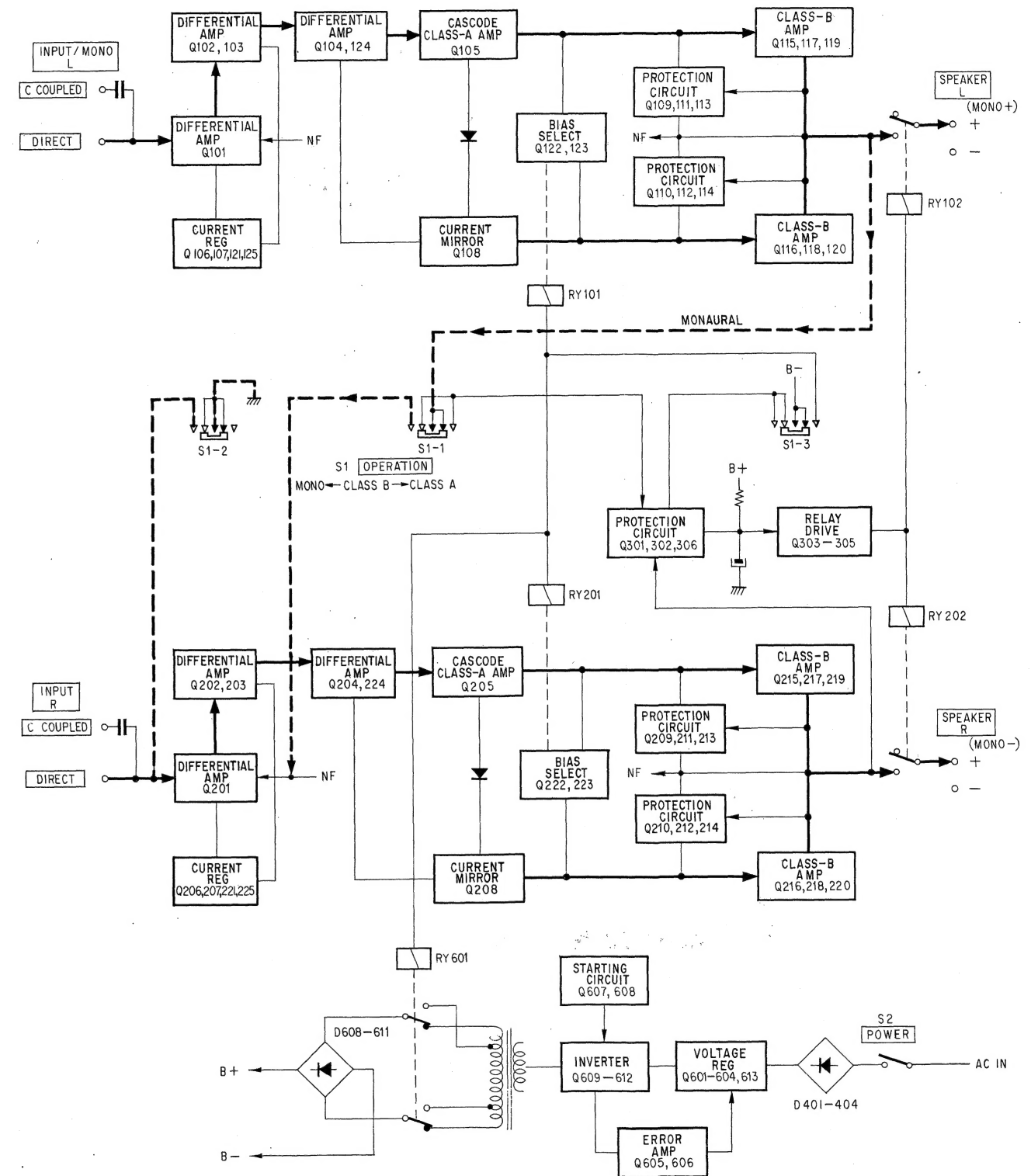


Fig. 1-3.

1-2. BLOCK DIAGRAM

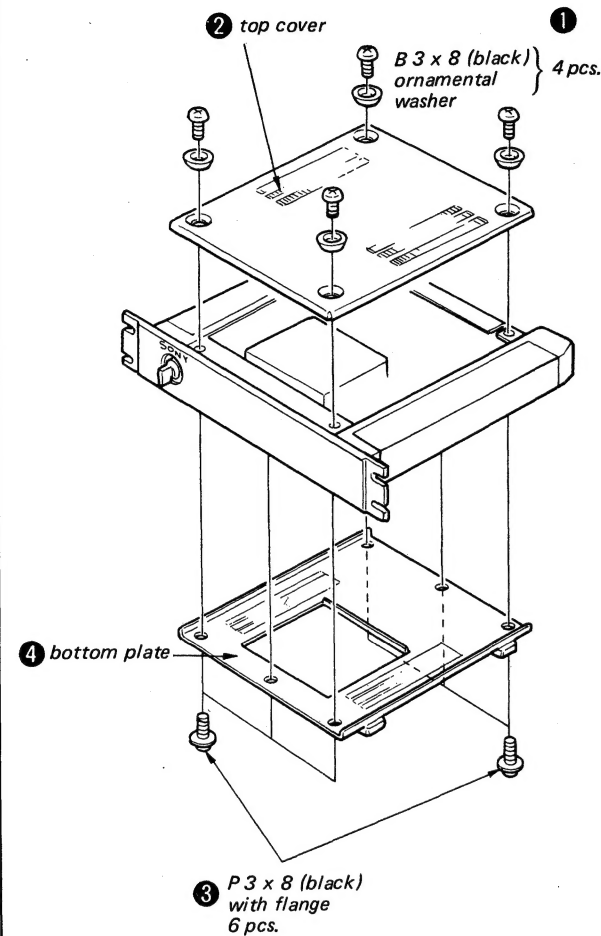


SECTION 2 DISASSEMBLY

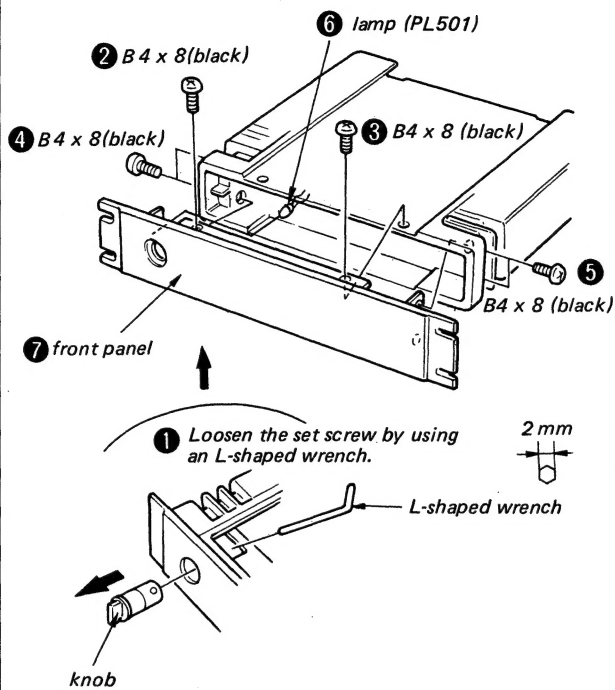
- Follow the disassembly procedure in the numerical order given.

Top Cover and Bottom Plate Removal

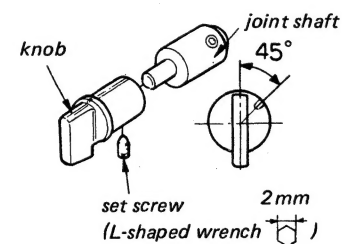
Note: The power amp board can be checked by removing the top cover and the bottom plate.



Front Panel Removal



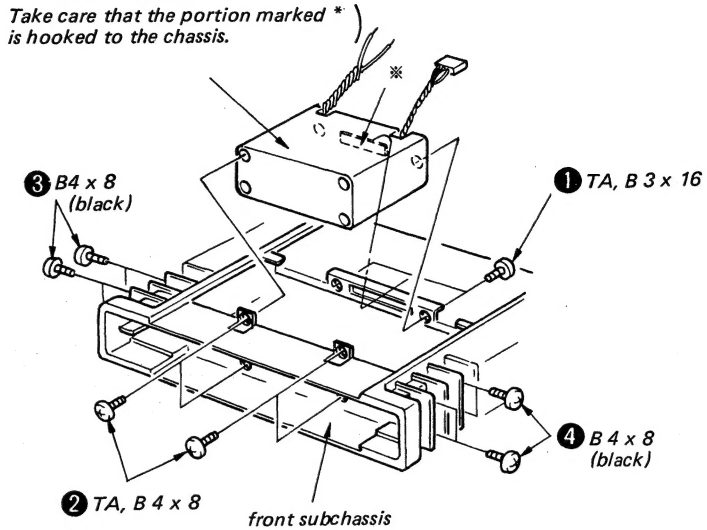
Note: When the knob is installed to the joint shaft, refer to the figure below.



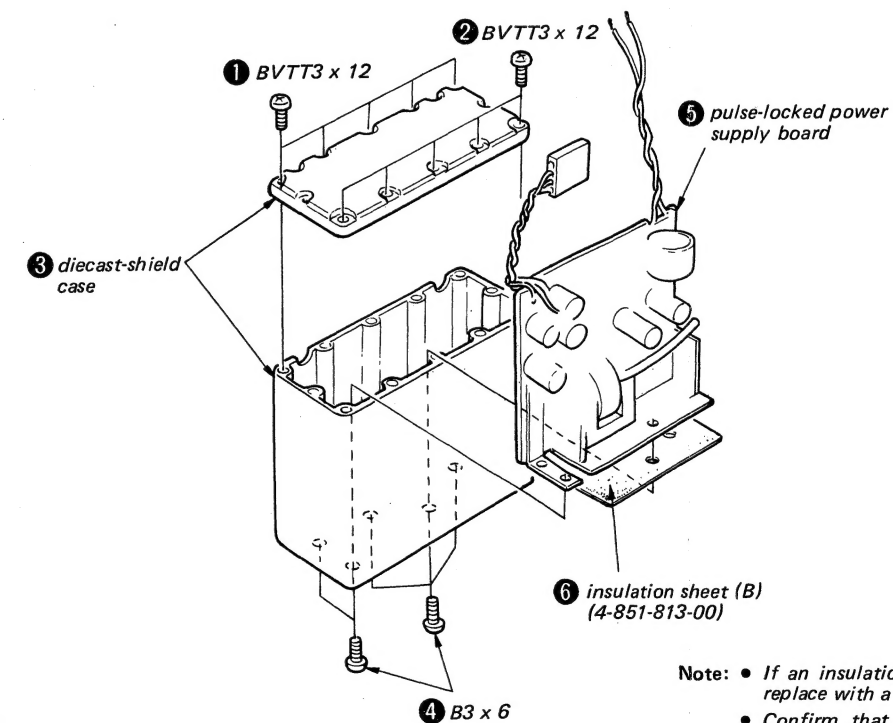
Pulse-locked Power Supply Section Removal

⑤ pulse-locked power supply section

Note: Take care that the portion marked * is hooked to the chassis.



Pulse-locked Power Supply Board Removal



Note:

- If an insulation sheet is defective, replace with a new one.
- Confirm that there are no scraps of solder or lead wire on any insulation sheet (B).

SECTION 3

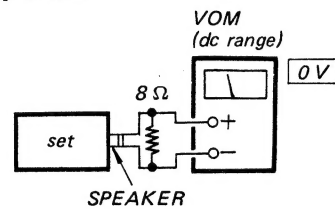
ADJUSTMENTS

- Note:** 1. DC BIAS and DC BALANCE adjustments should be performed about several minutes later after the POWER switch (S10) is turned on.
2. Repeat DC BIAS and DC BALANCE adjustments two or three times.
3. After replacing the power transistors, DC BIAS and DC BALANCE adjustments should be performed.

DC Balance Adjustment

Procedure:

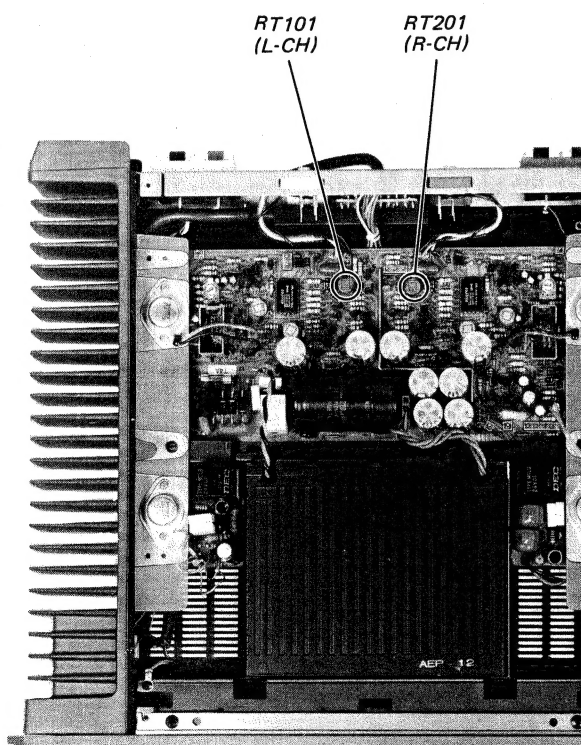
— Power Amp Board —



Adjust RT101 (L-CH) and RT201 (R-CH) for 0 V reading on the VOM.

Adjustment Location

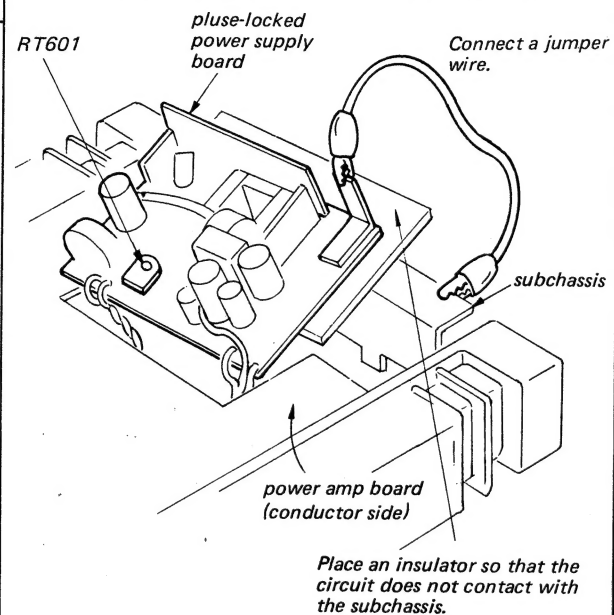
— Power Amp Board —



DC Voltage Adjustment

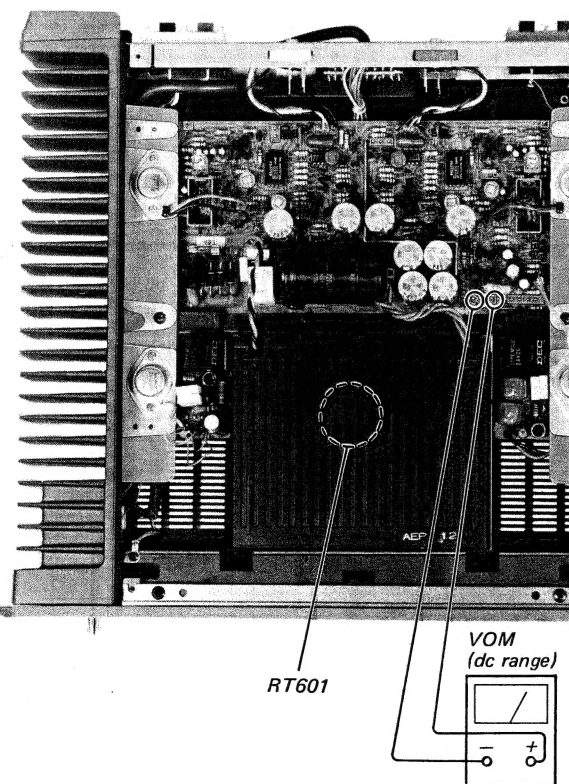
Procedure:

1. Connect a jumper wire.
2. Set the OPERATION switch (S1) to "CLASS B".
3. Adjust RT601 for 90 V reading on the VOM.



Adjustment Location

— Pulse-locked Power Supply Board —



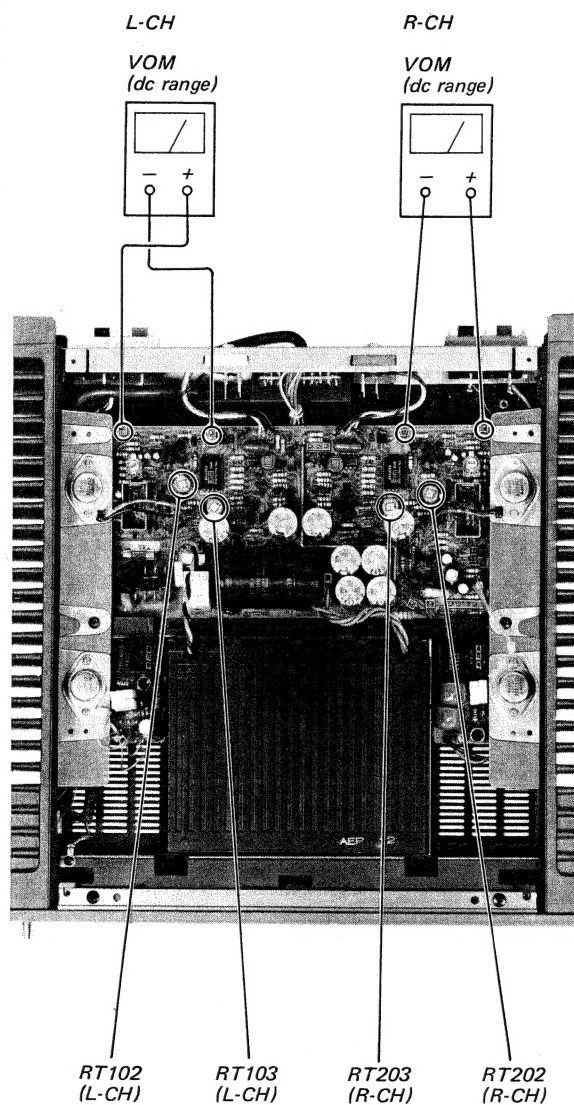
DC Bias Adjustment

Procedure:

1. Set the OPERATION switch (S1) to "CLASS A".
2. Adjust RT103 (L-CH) and RT203 (R-CH) for 350 mV dc on the VOM.
3. Set the OPERATION switch (S1) to "CLASS B".
4. Adjust RT102 (L-CH) and RT202 (R-CH) for 20 mV dc on the VOM.

Adjustment Location

— Power Amp Board —

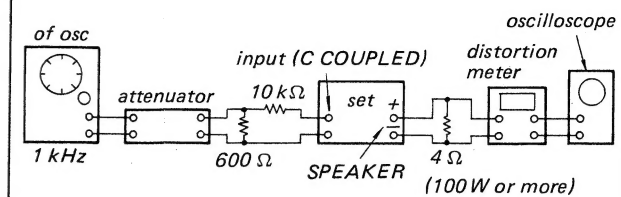


CLASS-B Amp Adjustments

Setting:

OPERATION switch (S1): CLASS-B

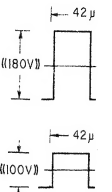
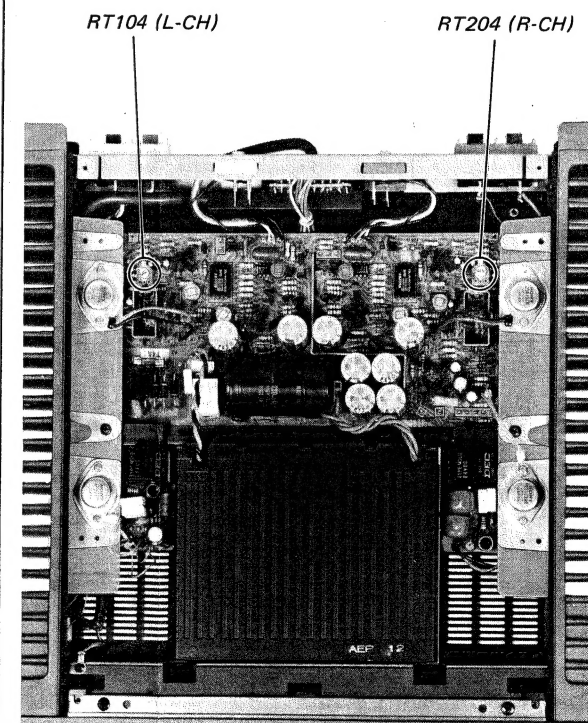
Procedure:



1. Adjust the attenuator for specified reading as shown below.
19 V US, Canadian model
15.5 V AEP, UK model
2. Adjust RT104 (L-CH) and RT204 (R-CH) for 0.007% or less on the distortion meter or for waveform with no clip on the oscilloscope.

Adjustment Location

— Power Amp Board —



SECTION 4

DIAGRAMS

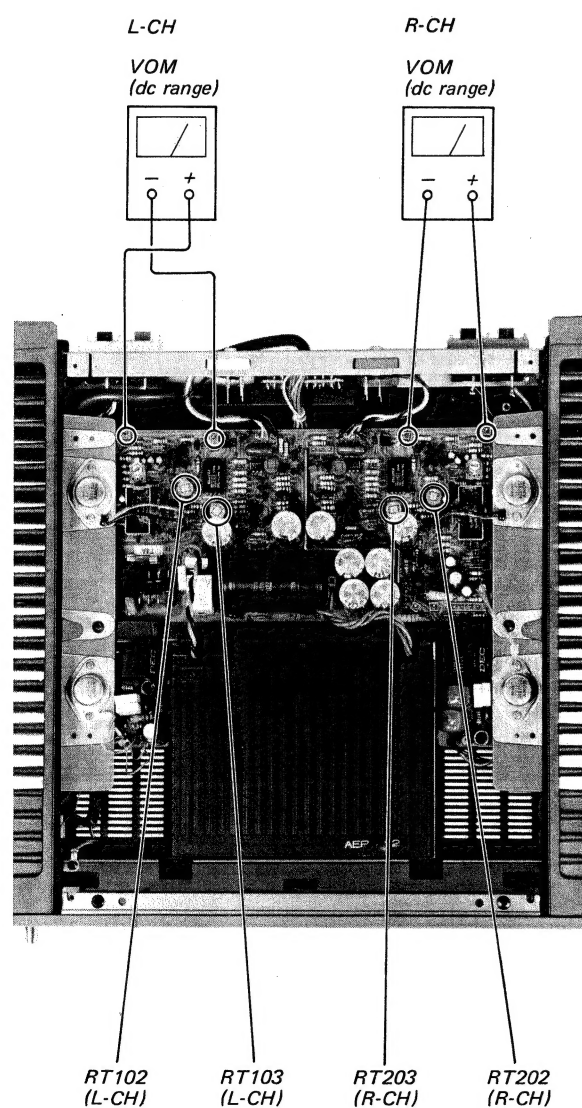
DC Bias Adjustment

Procedure:

1. Set the OPERATION switch (S1) to "CLASS A".
2. Adjust RT103 (L-CH) and RT203 (R-CH) for 350 mV dc on the VOM.
3. Set the OPERATION switch (S1) to "CLASS B".
4. Adjust RT102 (L-CH) and RT202 (R-CH) for 20 mV dc on the VOM.

Adjustment Location

- Power Amp Board -

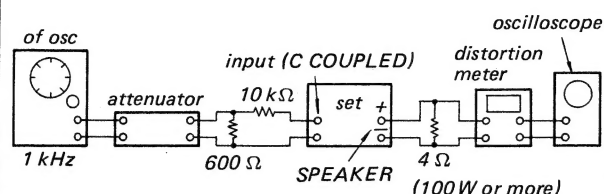


CLASS-B Amp Adjustments

Setting:

OPERATION switch (S1): CLASS-B

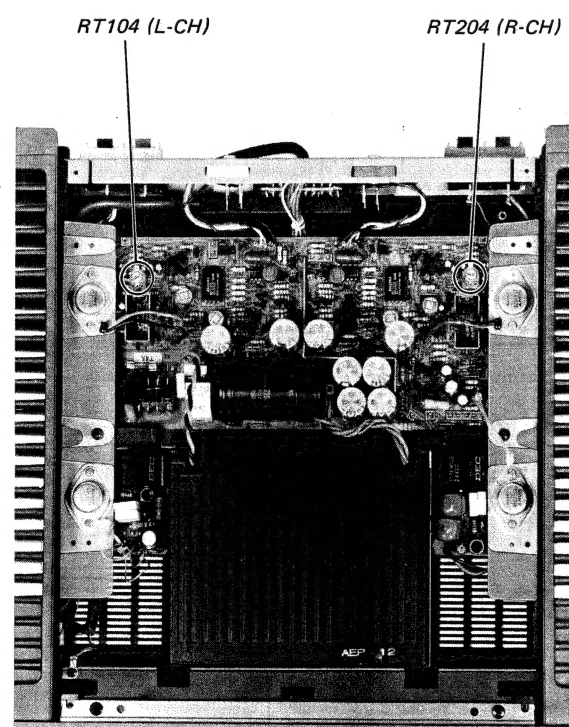
Procedure:



1. Adjust the attenuator for specified reading as shown below.
19 V US, Canadian model
15.5 V AEP, UK model
2. Adjust RT104 (L-CH) and RT204 (R-CH) for 0.007 % or less on the distortion meter or for waveform with no clip on the oscilloscope.

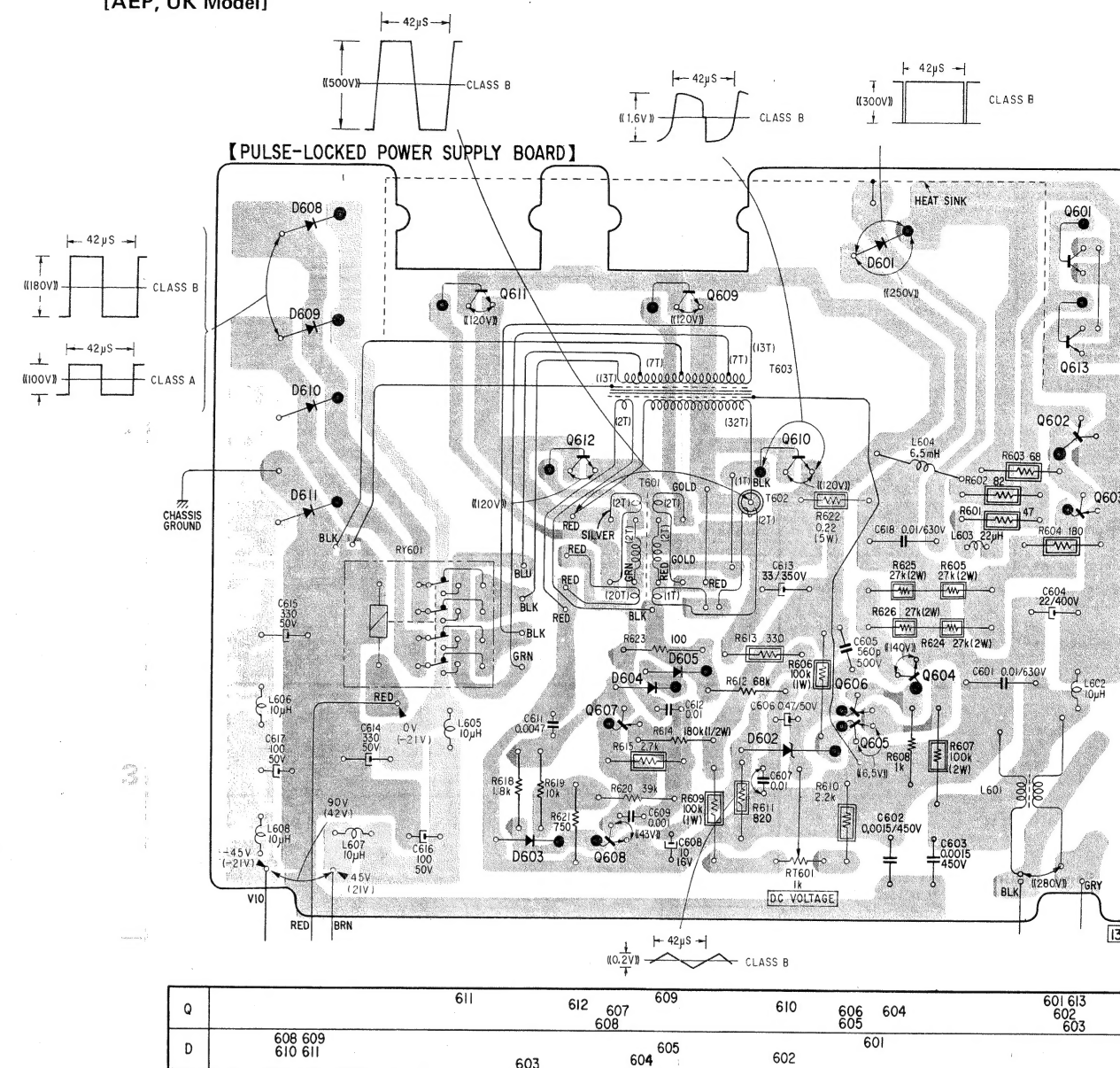
Adjustment Location

- Power Amp Board -



4-1. MOUNTING DIAGRAM — Pulse-locked Power Supply Board —

[AEP, UK Model]

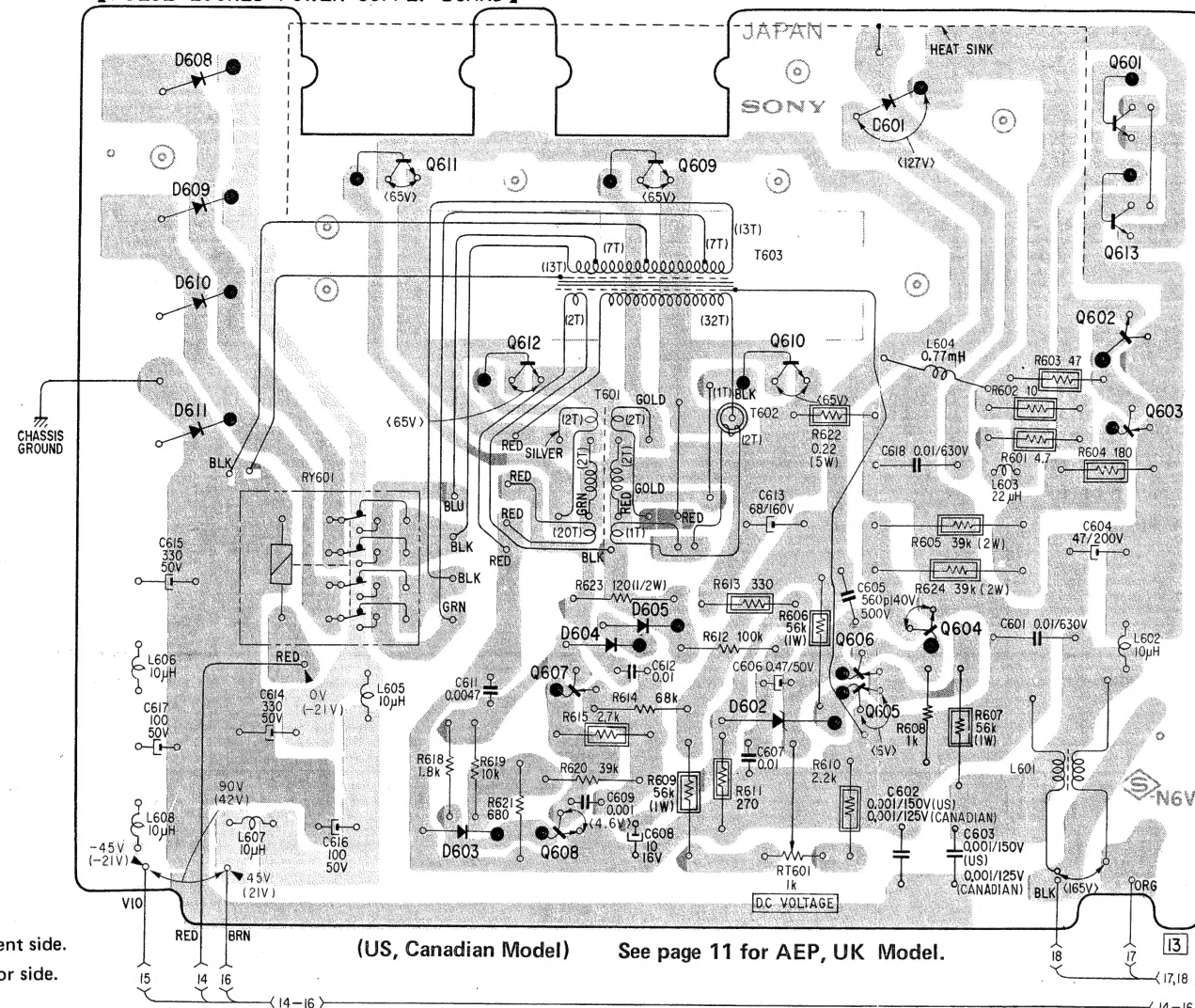
Replacement Semiconductors
see page 18.

Note:

- : parts extracted from the component side.
- : B + pattern
- Readings are taken under no-signal conditions with a VOM (20 kΩ/V)
- Voltage values for pulse-locked power supply circuit () class A
(()) with 220 V ac
< > with 120 V ac
- The waveforms are taken under class-B operation with 220 V ac unless otherwise noted.

4.2. MOUNTING DIAGRAM

【PULSE-LOCKED POWER SUPPLY BOARD】



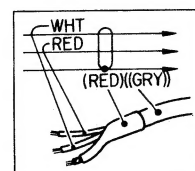
Replacement Semiconductors
see page 18.

Note:

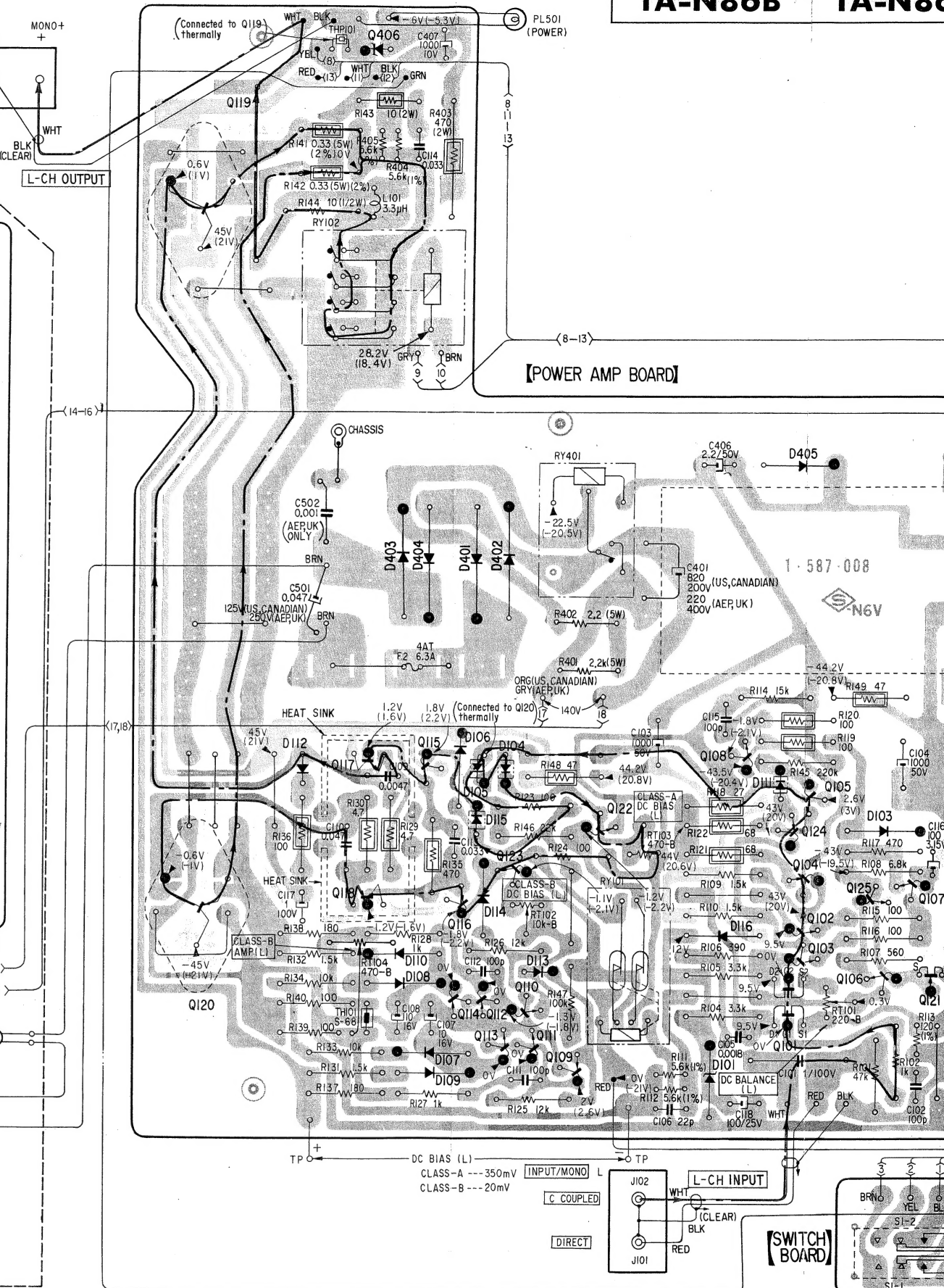
- : parts extracted from the component side.
- : parts extracted from the conductor side.
- : B + pattern

- Signal Path
- : L-CH
- : R-CH

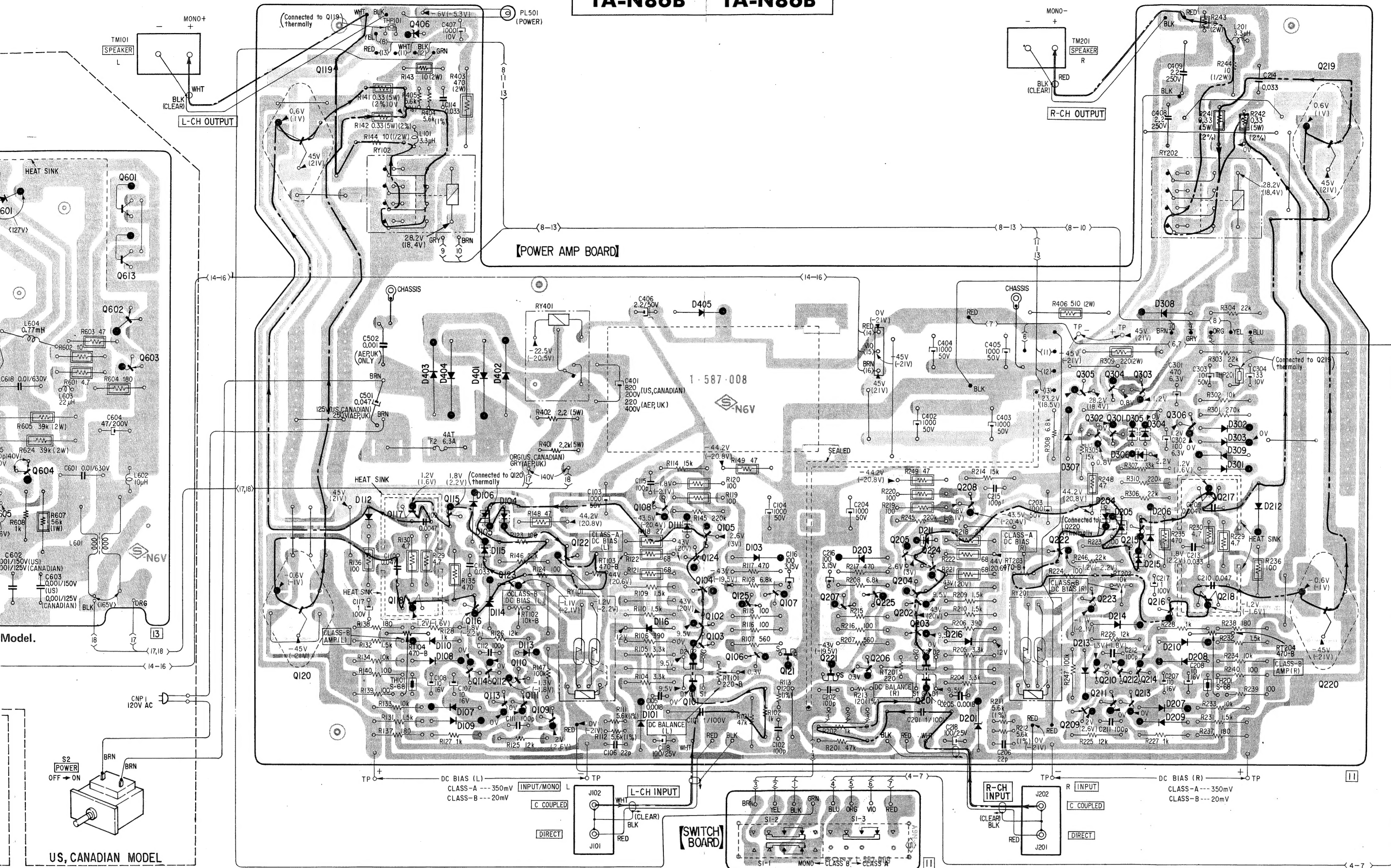
- Readings are taken under no-signal conditions with a VOM (20 k Ω /V) (OPERATION switch: CLASS B)
- Voltage values for pulse-locked power supply circuit () class A
(() with 220 V ac
< > with 120 V ac
- The waveforms are taken under class-B operation with 220 V ac unless otherwise noted.
- Color code of sleeving over the end of the jacket.



| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---------|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Q | 611 | 612 | 607 | 609 | 610 | 606 | 604 | 601 | 613 | 602 | 603 | 119 | 120 | 117 | 118 | 115 | 116 | 123 | 110 | 122 | 108 | 124 | 105 | 104 | 125 | 107 |
| D | 608 609 | 610 611 | 603 | 604 | 605 | 602 | 601 | 603 | 602 | 603 | 603 | 112 | 406 | 403 | 404 | 401 | 105 | 104 | 113 | 114 | 109 | 116 | 405 | 103 | 106 | 121 |

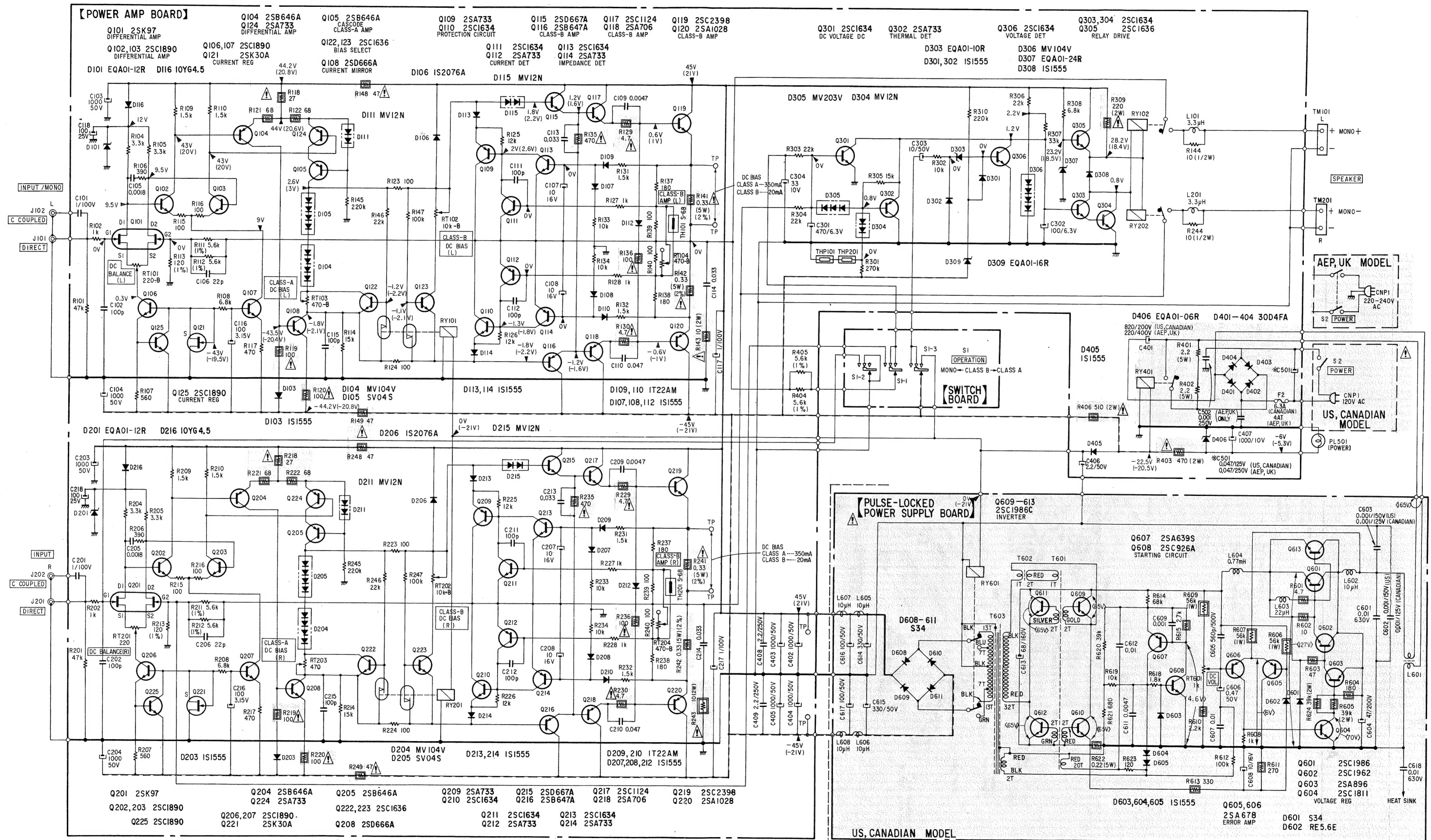


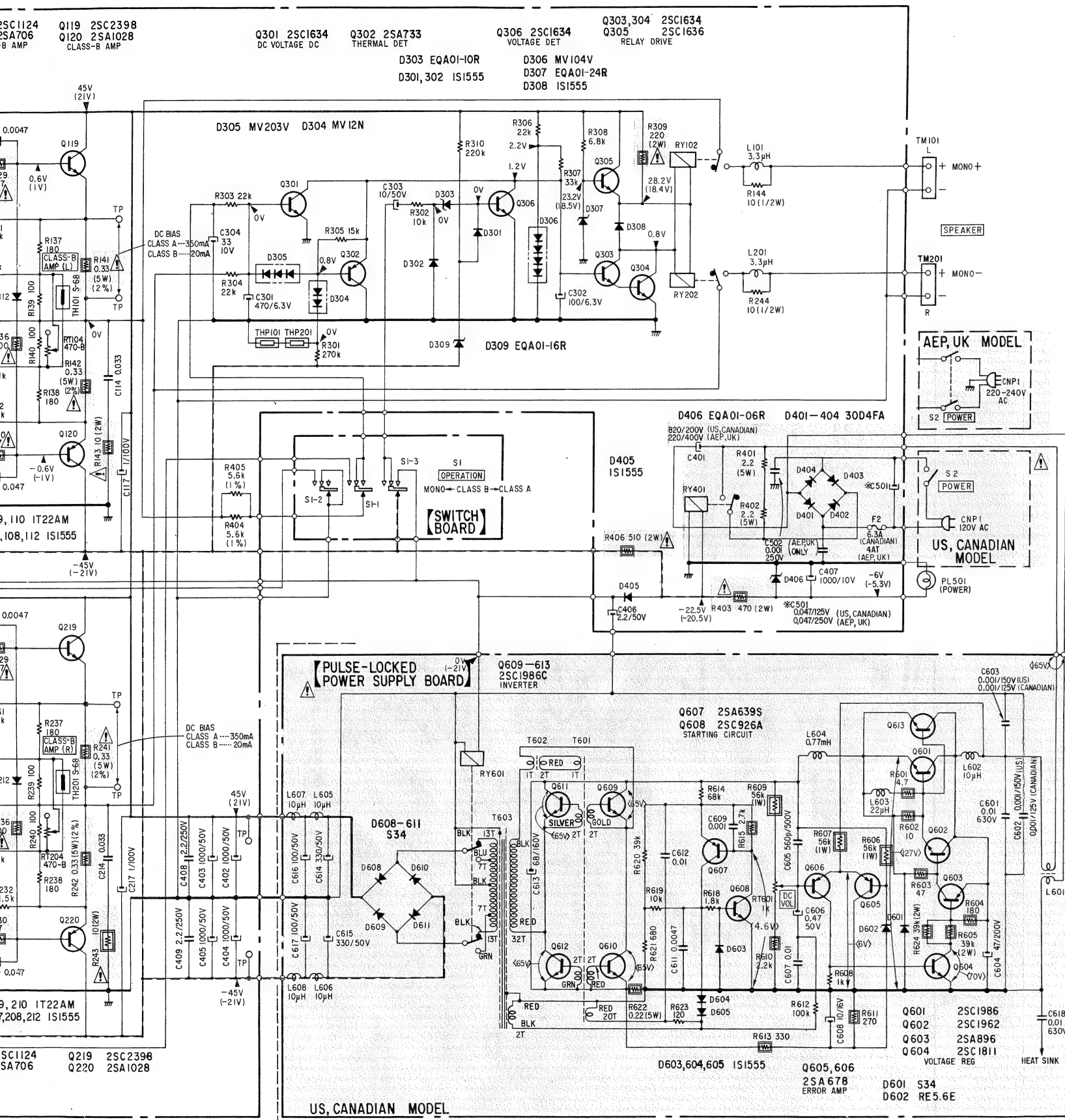
TA-N86B TA-N86B



| | | | | | | | | | | | | | | | | | | | |
|-----|-----------------------|------------|----------------|-----------------------------------|--------------------------|-----------------------|------------|------------|-------------------------------|------------|------------|------------|------------|-------------------------------|--------------------------------------|-----------------------|---|------------|---|
| 604 | 601,613 602 603 | 119 120 | 117 118 | 115 114 | 116 112 | 123 110 113,111 | 122 109 | 108 | 124,105 104 101,102,103 | 125 106 | 107 121 | 207 221 | 225 206 | 205,204 202,224 203,201 | 208 | 222 | 305,302 223 209,210,211,212,213,214,215,216,217,218 | 219 220 | Q |
| 501 | | 112 | 406 110,108 | 106,105 403,404,401 107,109 | 104 115 402 114 | 113 | 116 101 | 405 111 | 103 | 203 | 211 | 201 | 216 201 | 307 213 | 204,205 214 305,304 306,215 | 206,308 207 209 | 210 208 309,301 | 212 | D |

4-3. SCHEMATIC DIAGRAM





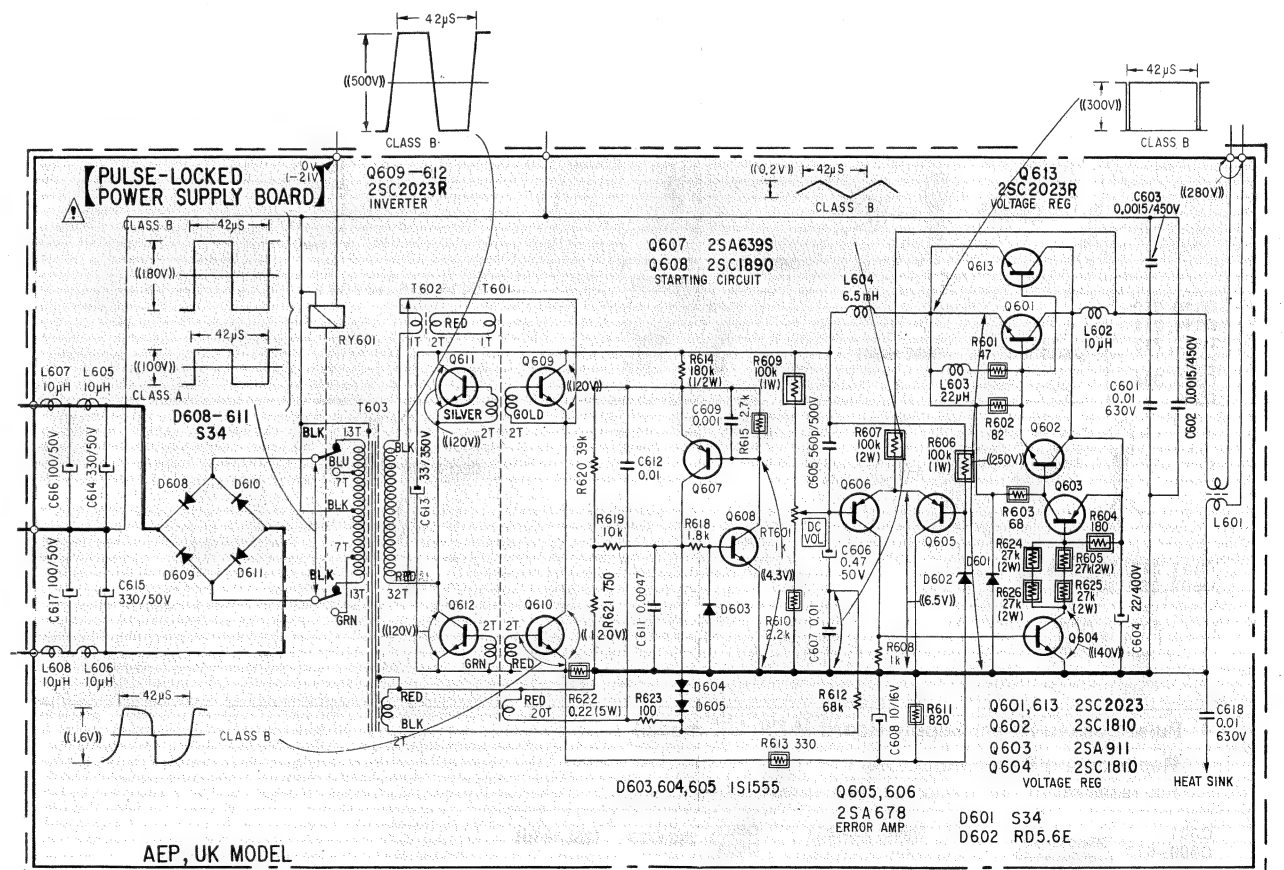
Note:

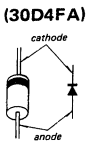
- All capacitors are in μF unless otherwise noted $\text{pF} = \mu\text{F}$ 50 WV or less are not indicated except for electrolytics.
- All resistors are in ohms, $\frac{1}{2} W$ unless otherwise noted. $k\Omega : 1000 \Omega$; $M\Omega = 1000 k\Omega$
- Voltages are dc with respect to ground unless otherwise noted.
- All adjustable resistors have characteristic curve B, unless otherwise noted.
- \square : nonflammable resistor.
- 1% indicates component tolerance.
- \square : panel designation.
- \square : adjustment for repair.
- Readings are taken under no-signal conditions with a VOM (20 $k\Omega/V$) (OPERATION switch: CLASS B)
- Voltage values for pulse-locked power supply circuit () class A () with 220 V ac < > with 120 V ac
- The waveforms are taken under class-B operation with 220 V ac unless otherwise noted.
- : B+ bus.
- - - : B- bus.
- Switch

| Ref. No. | Switch | Position |
|----------|-----------|----------|
| S1 | OPERATION | CLASS B |
| S2 | POWER | OFF |

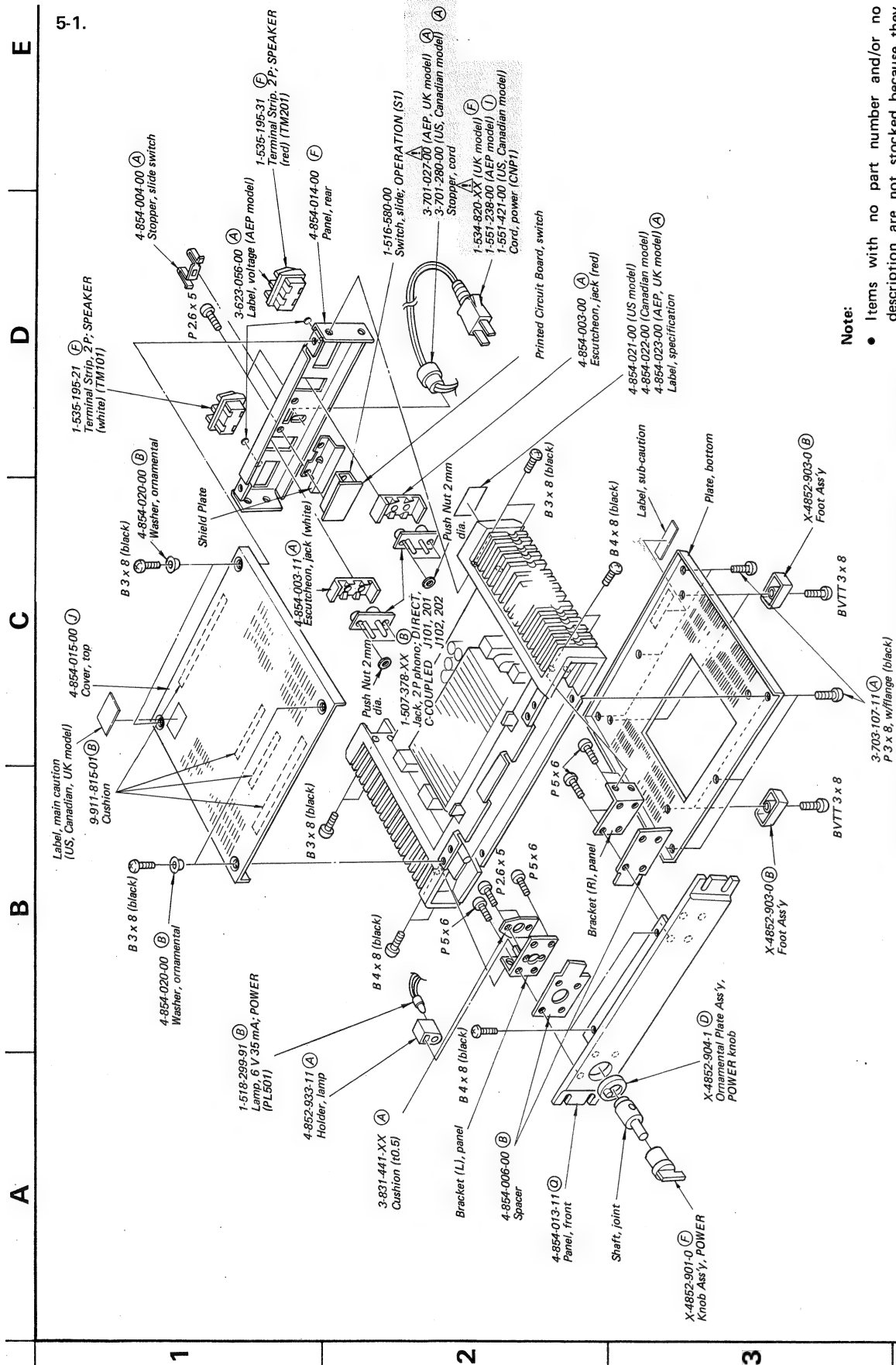
Note: The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un tramé et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.





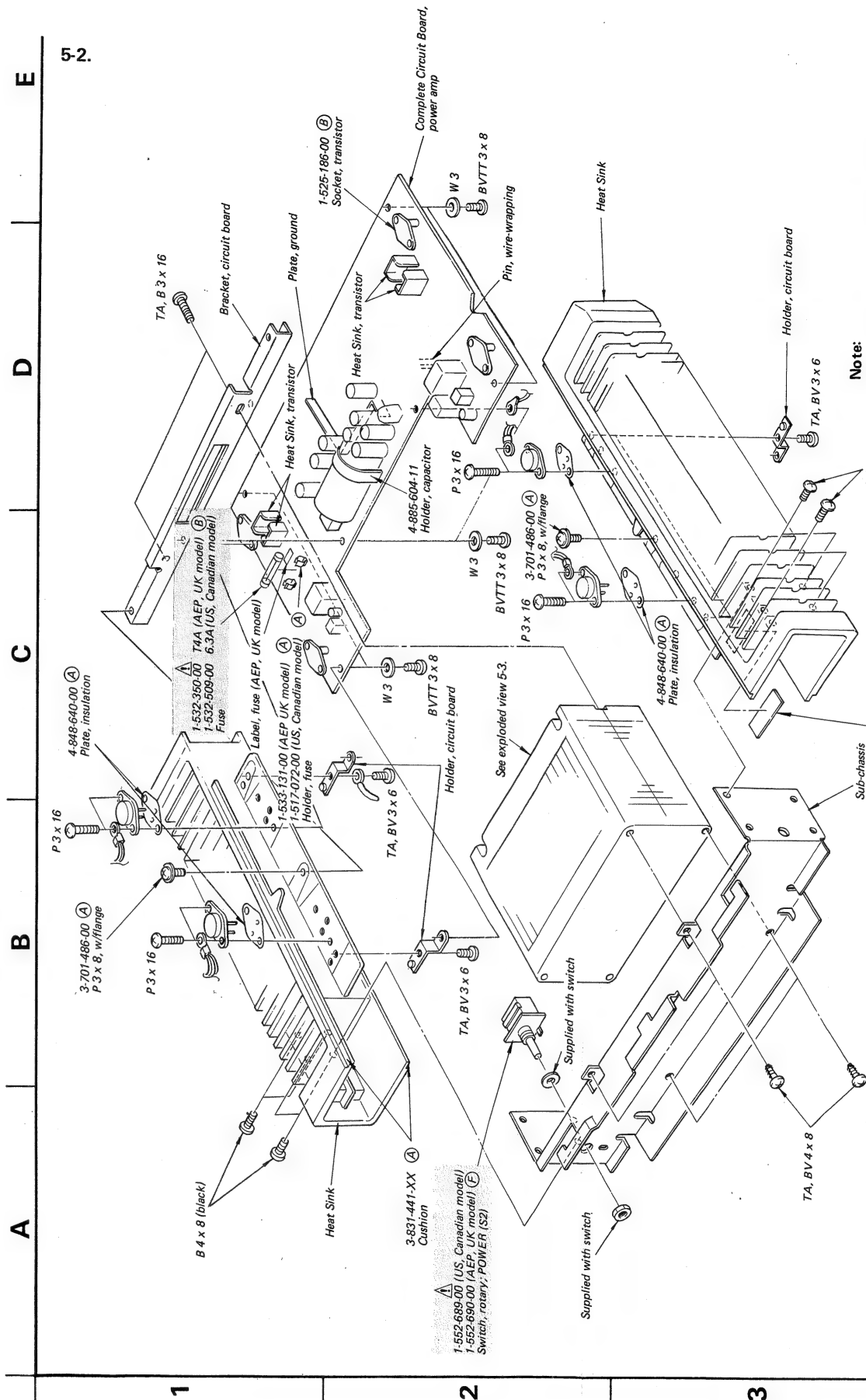
SECTION 5
EXPLODED VIEWS



- Note:**
- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
 - All screws are Phillips (cross recess) type unless otherwise noted.
(-) = slotted head
 - Circled letters (A) to (Z) are applicable to European models only.

Note: Les composants identifiés par un trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note: The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.



- Note:**
- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
 - All screws are Phillips (cross recess) type unless otherwise noted.
(-) = slotted head
 - Circled letters (A) to (Z) are applicable to European models only.

Note: Les composants identifiés par un trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note: The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.



- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
(—) = slotted head
- Circled letters (**A** to **Z**) are applicable to European models only.

Note: Les composants identifiés par un tramé et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.

SECTION 6
ELECTRICAL PARTS LIST

Note: Circled letters (A to Z) are applicable to European models only.

Ref. No. Part No. Description

SEMICONDUCTORS
Transistors

| | | |
|-------------|---------------|-------------------------------|
| Q101, 201 | 8-765-342-10 | (F) 2SK97 |
| ⇒ Q102, 202 | 8-720-950-03 | (C) 2SC926A |
| ⇒ Q103, 203 | | |
| Q104, 204 | 8-729-304-62 | (B) 2SB646A |
| Q105, 205 | | |
| ⇒ Q106, 206 | 8-720-950-03 | (C) 2SC926A |
| ⇒ Q107, 207 | | |
| ⇒ Q108, 208 | 8-765-012-20 | (C) 2SC1811 |
| ⇒ Q109, 209 | 8-729-612-77 | (B) 2SA1027R |
| ⇒ Q110, 210 | 8-729-663-47 | (C) 2SC1364 |
| ⇒ Q111, 211 | | |
| ⇒ Q112, 212 | 8-729-612-77 | (B) 2SA1027R |
| ⇒ Q113, 213 | 8-729-663-47 | (C) 2SC1364 |
| ⇒ Q114, 214 | 8-729-612-77 | (B) 2SA1027R |
| Q115, 215 | 8-729-306-72 | (B) 2SD667A |
| Q116, 216 | 8-729-300-72 | (B) 2SB647A |
| Q117, 217 | 8-725-412-00 | (C) 2SC1124 |
| Q118, 218 | 8-727-632-00 | (C) 2SA706 |
| Q119, 219 | 8-765-471-20 | (I) 2SC2398 |
| Q120, 220 | 8-765-481-20 | (K) 2SA1028 |
| Q121, 221 | 8-729-203-04 | (B) 2SK30A |
| Q122, 222 | 8-761-622-00 | (B) 2SC1636 |
| Q123, 223 | | |
| ⇒ Q124, 224 | 8-729-612-77 | (B) 2SA1027R |
| ⇒ Q125, 225 | 8-720-950-03 | (C) 2SC926A |
| ⇒ Q301 | 8-729-663-47 | (C) 2SC1364 |
| ⇒ Q302 | 8-729-612-77 | (B) 2SA1027R |
| ⇒ Q303, 304 | 8-729-663-47 | (C) 2SC1364 |
| Q305 | 8-761-622-00 | (B) 2SC1636 |
| ⇒ Q306 | 8-729-663-47 | (C) 2SC1364 |
| ⇒ Q601 | △8-729-302-31 | (D) 2SC2023-R (AEP, UK model) |
| ⇒ Q601 | △8-729-302-32 | (D) 2SC2023-O (AEP, UK model) |
| ⇒ Q601 | △8-729-308-72 | 2SC1986D (US, Canadian model) |
| ⇒ Q602 | △8-729-372-30 | (C) 2SC1723 (AEP, UK model) |
| Q602 | △8-765-170-01 | 2SC1962 (US, Canadian model) |
| Q603 | △8-765-082-20 | 2SA896 (US, Canadian model) |

⇒: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

Note: The components identified by shading and mark △ are critical for safety. Replace only with part number specified.

Ref. No. Part No. Description

| | | |
|-------------|---------------|---------------------------------|
| Q603 | △8-765-141-00 | (J) 2SA911 (AEP, UK model) |
| ⇒ Q604 | △8-729-372-30 | (C) 2SC1723 (AEP, UK model) |
| Q604 | △8-765-012-20 | 2SC1811 (US, Canadian model) |
| ⇒ Q605, 606 | △8-729-612-77 | (B) 2SA1027R |
| Q607 | △8-729-163-04 | (C) 2SA639S |
| Q608 | △8-720-950-03 | (C) 2SC926A |
| ⇒ Q609-613 | △8-729-302-31 | (D) 2SC2023-R (AEP, UK model) |
| ⇒ Q609-613 | △8-729-302-32 | (D) 2SC2023-O (AEP, UK model) |
| ⇒ Q609-613 | △8-729-308-72 | 2SC1986D-O (US, Canadian model) |

Diodes

| | | |
|-------------|---------------|---------------|
| ⇒ D101, 201 | 8-719-930-12 | (B) EQB01-12Z |
| D103, 203 | 8-719-815-55 | (B) 1S1555 |
| D104, 204 | 8-719-910-40 | (B) MV104V |
| D105, 205 | 8-719-300-11 | (B) SV04S |
| D106, 206 | 8-719-923-76 | (B) 1S2076A |
| D107, 207 | | |
| D108, 208 | 8-719-815-55 | (B) 1S1555 |
| D109, 209 | | |
| D110, 210 | 8-719-422-21 | (B) 1T22AM |
| D111, 211 | 8-719-912-00 | (B) MV12N |
| D112-114 | | |
| D212-214 | 8-719-815-55 | (B) 1S1555 |
| D115, 215 | 8-719-912-00 | (B) MV12N |
| D116, 216 | 8-719-210-45 | (C) 10YG4.5 |
| D301, 302 | 8-719-815-55 | (B) 1S1555 |
| ⇒ D303 | 8-719-931-10 | (B) EQB01-10 |
| D304 | 8-719-912-00 | (B) MV12N |
| D305 | 8-719-920-30 | (B) MV203V |
| D306 | 8-719-910-40 | (B) MV104V |
| ⇒ D307 | 8-719-931-24 | (B) EQB01-24 |
| D308 | 8-719-815-55 | (B) 1S1555 |
| ⇒ D309 | 8-719-931-16 | (B) EQB01-16 |
| ⇒ D401-404 | △8-719-911-55 | (B) U05G |
| D405 | 8-719-815-55 | (B) 1S1555 |
| ⇒ D406 | 8-719-931-16 | (B) EQB01-16 |
| D601 | △8-719-303-41 | (C) S34 |
| D602 | △8-719-156-08 | (B) RD5.6E |
| D603-605 | △8-719-815-55 | (B) 1S1555 |
| D608-611 | △8-719-303-41 | (C) S34 |

Note: Les composants identifiés par un trame et une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note: Circled letters (A to Z) are applicable to European models only.

Ref. No. Part No. Description

Thermistors

TH101, 201 1-800-193-00 (A) Thermistor, S-68
THP101, 201 1-800-427-00 (B) Thermistor, positive

COILS

L601 (A) 1-421-259-00 Line filter (US, Canadian model)
L601 (A) 1-421-349-00 (F) Line filter (AEP, UK model)
L602 (A) 1-421-329-00 (B) 10 μ H, choke
L603 (A) 1-407-161-XX (A) 22 μ H, microinductor
L604 (A) 1-421-347-00 0.77 mH, choke
(US, Canadian model)
L604 (A) 1-421-348-00 (J) 6.5 mH, choke (AEP, UK model)
L605-608 (A) 1-421-329-00 (B) 10 μ H, choke

TRANSFORMERS

T601 (A) 1-543-098-00 Core (US, Canadian model)
T601 (A) 1-543-100-00 (B) Core (AEP, UK model)
T602 (A) 1-543-121-00 (B) Core
T603 (A) 1-446-179-00 (M) Inverter (AEP, UK model)
T603 (A) 1-446-180-00 Inverter (US, Canadian model)

CAPACITORS

All capacitors are in μ F and electrolytic unless otherwise noted.
50 WV or less are not indicated except for electrolytics.
p : μ F, elect : electrolytic

C101, 201 1-130-083-00 (C) 1 100 V polyethylene
C102, 202 1-102-975-00 (A) 100 p ceramic
C103, 203 1-123-061-00 (C) 1000 50 V
C104, 204
C105, 205 1-108-561-00 (A) 0.0018 mylar
C106, 206 1-107-069-00 (A) 22 p mica
C107, 207 1-121-651-00 (A) 10 16 V
C108, 208
C109, 209 1-108-234-00 (A) 0.0047 mylar
C110, 210 1-108-246-00 (A) 0.047 mylar
C111, 211 1-102-975-00 (A) 100 p ceramic
C112, 212
C113, 213 1-108-244-00 (A) 0.033 mylar
C114, 214





Ref. No. Part No. Description

C115, 215 1-107-085-00 (A) 100 p mica
C116, 216 1-131-177-00 (C) 100 3.15 V tantalum
C117, 217 1-123-249-00 (A) 1 100 V
C118, 218 1-121-417-00 (B) 100 25 V
C301 1-121-424-00 (B) 470 6.3 V
C302 1-121-414-00 (A) 100 6.3 V
C303 1-121-738-00 (A) 10 50 V
C304 1-121-402-00 (A) 33 10 V
C401 (A) 1-123-407-00 (I) 220 400 V (AEP, UK model)
C401 (A) 1-123-408-00 820 200 V (US, Canadian model)
C402-405 1-123-061-00 (C) 1000 50 V
C406 1-121-450-00 (A) 2.2 50 V
C407 1-121-736-00 (B) 1000 10 V
C408, 409 1-108-972-00 (G) 2.2 250 V mylar
C501 (A) 1-108-749-00 0.047 125 V mylar
(US model)
C501 (A) 1-130-159-00 (C) 0.047 250 V film
(AEP, UK model)
C501 (A) 1-130-197-00 0.047 125 V polyethylene
(Canadian model)
C502 (A) 1-102-222-00 (B) 0.001 250 V ceramic
(AEP, UK model)
C601 (A) 1-130-141-00 (A) 0.01 630 V polyethylene
C602, 603 (A) 1-115-149-00 (C) 0.0015 450 V paper
(AEP, UK model)
C602, 603 (A) 1-161-502-00 0.001 150 V ceramic
(US model)
C602, 603 (A) 1-161-516-00 0.001 125 V ceramic
(Canadian model)
C604 (A) 1-123-401-00 47 200 V (US, Canadian model)
C604 (A) 1-123-402-00 (C) 22 400 V (AEP, UK model)
C605 (A) 1-161-438-00 (A) 560 p 500 V ceramic
C606 (A) 1-121-726-00 (A) 0.47 50 V
C607 (A) 1-108-239-00 (A) 0.01 mylar
C608 (A) 1-121-651-00 (A) 10 16 V
C609 (A) 1-108-227-00 (A) 0.001 mylar
C611 (A) 1-108-234-00 (A) 0.0047 mylar
C612 (A) 1-108-239-51 (A) 0.01 mylar
C613 (A) 1-123-277-00 68 160 V (US, Canadian model)

Note: The components identified by shading and mark (A) are critical for safety. Replace only with part number specified.
















Note: Les composants identifiés par un trame et une marque (A) sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.


Note: Circled letters (A to Z) are applicable to European models only.

















| Ref. No. | Part No. | Description |
|-----------|---|-----------------------|
| C613 |  1-123-280-00 (C) 33 | 350 V (AEP, UK model) |
| C614, 615 |  1-121-656-00 (B) 330 | 50 V |
| C616, 617 |  1-121-417-00 (B) 100 | 50 V |
| C618 |  1-130-141-00 (A) 0.01 | 630 V polyethylene |


RESISTORS

All resistors are in ohms. Common 1/4 W carbon resistors are omitted. Refer to the list on page 27 for their part numbers. All adjustable resistors have characteristic curve B, unless otherwise noted. kΩ : 1000 Ω




















| | | |
|-----------|--|-----------------------------------|
| R111, 211 |  1-214-150-11 (A) 5.6 k | 1/4 W (1%) metal oxide |
| R112, 212 | | |
| R113, 213 | 1-214-110-00 (A) 120 | 1/4 W (1%) metal oxide |
| R118, 218 |  1-211-508-00 (A) 27 | 1/4 W carbon (nonflammable) |
| R119, 219 |  1-211-522-00 (A) 100 | 1/4 W carbon (nonflammable) |
| R120, 220 | | |
| R121, 221 |  1-211-518-00 (A) 68 | 1/4 W carbon (nonflammable) |
| R122, 222 | | |
| R129, 229 |  1-211-490-00 (A) 4.7 | 1/4 W carbon (nonflammable) |
| R130, 230 | | |
| R135, 235 |  1-211-538-00 (A) 470 | 1/4 W carbon (nonflammable) |
| R136, 236 |  1-211-522-00 (A) 100 | 1/4 W carbon (nonflammable) |
| R141, 241 |  1-217-573-00 0.33 | 5 W (2%) wirewound (nonflammable) |
| R142, 242 | | |
| R143, 243 |  1-206-463-00 (A) 10 | 2 W metal oxide (nonflammable) |
| R144, 244 |  1-244-825-00 10 | 1/2 W carbon |
| R148, 248 |  1-211-514-00 (A) 47 | 1/4 W carbon (nonflammable) |
| R149, 249 | | |
| R309 |  1-206-648-00 (A) 220 | 2 W metal oxide (nonflammable) |
| R401, 402 |  1-217-570-00 2.2 | 5 W metal plate |
| R403 |  1-206-656-00 (A) 470 | 2 W metal oxide (nonflammable) |
| R404, 405 | 1-214-150-00 5.6 k | 1/4 W (1%) metal oxide |
| R406 |  1-206-657-00 (A) 510 | 2 W metal oxide (nonflammable) |

Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.



| Ref. No. | Part No. | Description |
|----------|--|---|
| R601 |  1-211-490-00 4.7 1/4 W | carbon (nonflammable) (US, Canadian model) |
| R601 |  1-211-514-00 (A) 47 1/4 W | carbon (nonflammable) (AEP, UK model) |
| R602 |  1-211-498-00 10 1/4 W | carbon (nonflammable) (US, Canadian model) |
| R602 |  1-211-520-00 (A) 82 1/4 W | carbon (nonflammable) (AEP, UK model) |
| R603 |  1-211-514-00 47 1/4 W | carbon (nonflammable) (US, Canadian model) |
| R603 |  1-211-518-00 (A) 68 1/4 W | carbon (nonflammable) (AEP, UK model) |
| R604 |  1-211-528-00 (A) 180 1/4 W | carbon (nonflammable) |
| R605 |  1-214-596-00 39 k 2 W | metal oxide (nonflammable) (US, Canadian model) |
| R605 |  1-206-698-00 (A) 27 k 2 W | metal oxide (nonflammable) (AEP, UK model) |
| R606 |  1-214-598-00 56 k 1 W | metal oxide (nonflammable) (US, Canadian model) |
| R606 |  1-214-595-00 (A) 100 k 1 W | metal oxide (nonflammable) (AEP, UK model) |
| R607 |  1-214-598-00 56 k 1 W | metal oxide (nonflammable) (US, Canadian model) |
| R607 |  1-214-597-00 (A) 100 k 2 W | metal oxide (nonflammable) (AEP, UK model) |
| R608 |  1-246-470-00 (A) 1 k 1/4 W | carbon |
| R609 |  1-214-598-00 56 k 1 W | metal oxide (nonflammable) (US, Canadian model) |
| R609 |  1-214-595-00 (A) 100 k 1 W | metal oxide (nonflammable) (AEP, UK model) |


Note: Les composants identifiés par un trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note: Circled letters (A to Z) are applicable to European models only.

| <u>Ref. No.</u> | <u>Part No.</u> | <u>Description</u> | | |
|-----------------|--|--------------------|-----------------------------|--|
| R610 |  1-211-945-00 | (A) 2.2 k | ¼ W | carbon (nonflammable) |
| R611 |  1-211-532-00 | 270 | ¼ W | carbon (nonflammable) (US, Canadian model) |
| R611 |  1-211-544-00 | (A) 820 | ¼ W | carbon (nonflammable) (AEP, UK model) |
| R612 |  1-246-517-00 | (A) 68 k | ¼ W | carbon (AEP, UK model) |
| R612 |  1-246-521-00 | 100 k | ¼ W | carbon (US, Canadian model) |
| R614 |  1-244-927-00 | (A) 180 k | ½ W | carbon (AEP, UK model) |
| R614 |  1-246-517-00 | 68 k | ¼ W | carbon (US, Canadian model) |
| R615 |  1-211-553-00 | (A) 2.7 k | ¼ W | carbon (nonflammable) |
| R618 |  1-246-479-00 | (A) 1.8 k | ¼ W | carbon |
| R619 |  1-246-497-00 | (A) 10 k | ¼ W | carbon |
| R620 |  1-246-511-00 | (A) 39 k | ¼ W | carbon |
| R621 |  1-246-469-00 | 680 | ¼ W | carbon (US, Canadian model) |
| R621 |  1-246-470-00 | (A) 750 | ¼ W | carbon (AEP, UK model) |
| R622 |  1-217-156-00 | (B) 0.22 | 5 W | wirewound |
| R623 |  1-246-449-00 | (A) 100 | ¼ W | carbon (AEP, UK model) |
| R623 |  1-246-451-00 | 120 | ¼ W | carbon (US, Canadian model) |
| R624 |  1-214-596-00 | 39 k | 2 W | (US, Canadian model) |
| R624-626 |  1-206-698-00 | (A) 27 k | 2 W | metal oxide (AEP, UK model) |
| RT101, 201 | 1-224-550-21 | (B) 220 | adjustable; dc balance | |
| RT102, 202 | 1-224-252-XX | (B) 10 k | adjustable; class-B dc bias | |
| RT103, 203 | 1-224-248-XX | (B) 470 | adjustable; class-A dc bias | |
| RT104, 204 | 1-224-641-XX | (B) 470 | adjustable; class-B amp | |
| RT601 |  1-224-642-XX | (B) 1 k | adjustable; dc voltage | |









SWITCHES


| | |
|----|---|
| S1 | 1-516-580-00 (C) Slide, OPERATION |
| S2 |  1-552-689-00 Rotary, POWER (US, Canadian model) |
| S2 |  1-552-690-00 (F) Rotary, POWER (AEP, UK model) |

Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.

| Ref. No. | Part No. | Description |
|----------|----------|-------------|
|----------|----------|-------------|

MISCELLANEOUS

| | |
|------------------------|---|
| CNP1 |  1-551-238-00 (I) Cord, power (AEP model) |
| CNP1 |  1-551-421-00 Cord, power (US, Canadian model) |
| CNP1 |  1-534-820-XX (F) Cord, power (UK model) |
| F2 |  1-532-350-00 (B) Fuse, 4AT (AEP, UK model) |
| F2 |  1-532-509-00 Fuse, 6.3A (US, Canadian model) |
| J101, 201 J102, 202 | 1-507-378-XX (B) Jack, 2 p; DIRECT, C COUPLED |
| PL501 | 1-518-299-91 (B) Lamp, 6 V 35 mA; POWER |
| RY101, 201 | 1-515-294-00 (F) Relay |
| RY102, 202 | 1-515-302-00 (F) Relay |
| RY401 |  1-515-278-00 Relay (US, Canadian model) |
| RY401 |  1-515-278-00 (F) Relay (AEP, UK model) |
| RY601 |  1-515-127-XX (I) Relay |
| TM101 | 1-535-195-21 (F) Terminal Strip, 2 p; SPEAKER (white) |
| TM201 | 1-535-195-31 (F) Terminal Strip, 2 p; SPEAKER (red) |
| | 1-517-072-00 Holder, lamp (US, Canadian model) |
| | 1-525-186-00 (B) Socket, transistor |
| | 1-533-131-00 (A) Holder, fuse |

Note: Les composants identifiés par un tramé et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note: Circled letters (**A** to **Z**) are applicable to European models only.

ACCESSORIES AND PACKING MATERIALS

| <u>Part No.</u> | <u>Description</u> |
|-----------------|---|
| 3-701-202-00 | (A) Bag, check sheet |
| 3-770-353-11 | (F) Manual, instruction (AEP, UK model) |
| 3-770-353-21 | Manual, instruction (US, Canadian model) |
| 3-794-233-21 | Sheet (US model) |
| 3-794-301-31 | Sheet, instruction (Canadian model) |
| 4-809-251-00 | (A) Bag, plastic |
| 4-854-019-00 | (C) Cushion |
| 4-854-024-00 | (F) Carton (AEP, UK model) |
| 4-854-025-00 | (B) Sub-cushion (AEP, UK model) |
| 4-854-026-00 | Carton (US, Canadian model) |

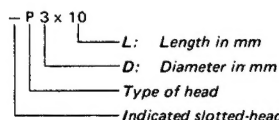
1/4 WATT CARBON RESISTORS ①

Note: Circled letter ① is applicable to European models only.

| Ω | Part No. | Ω | Part No. | Ω | Part No. | Ω | Part No. | Ω | Part No. | Ω | Part No. | Ω | Part No. |
|-----|--------------|----|--------------|-----|--------------|------|--------------|-----|--------------|------|--------------|------|--------------|
| 1.0 | 1-246-401-00 | 10 | 1-246-425-00 | 100 | 1-246-449-00 | 1.0k | 1-246-473-00 | 10k | 1-246-497-00 | 100k | 1-246-521-00 | 1.0M | 1-246-545-00 |
| 1.1 | 1-246-402-00 | 11 | 1-246-426-00 | 110 | 1-246-450-00 | 1.1k | 1-246-474-00 | 11k | 1-246-498-00 | 110k | 1-246-522-00 | 1.1M | 1-210-814-00 |
| 1.2 | 1-246-403-00 | 12 | 1-246-427-00 | 120 | 1-246-451-00 | 1.2k | 1-246-475-00 | 12k | 1-246-499-00 | 120k | 1-246-523-00 | 1.2M | 1-210-815-00 |
| 1.3 | 1-246-404-00 | 13 | 1-246-428-00 | 130 | 1-246-452-00 | 1.3k | 1-246-476-00 | 13k | 1-246-500-00 | 130k | 1-246-524-00 | 1.3M | 1-210-816-00 |
| 1.5 | 1-246-405-00 | 15 | 1-246-429-00 | 150 | 1-246-453-00 | 1.5k | 1-246-477-00 | 15k | 1-246-501-00 | 150k | 1-246-525-00 | 1.5M | 1-210-817-00 |
| 1.6 | 1-246-406-00 | 16 | 1-246-430-00 | 160 | 1-246-454-00 | 1.6k | 1-246-478-00 | 16k | 1-246-502-00 | 160k | 1-246-526-00 | 1.6M | 1-210-818-00 |
| 1.8 | 1-246-407-00 | 18 | 1-246-431-00 | 180 | 1-246-455-00 | 1.8k | 1-246-479-00 | 18k | 1-246-503-00 | 180k | 1-246-527-00 | 1.8M | 1-210-819-00 |
| 2.0 | 1-246-408-00 | 20 | 1-246-432-00 | 200 | 1-246-456-00 | 2.0k | 1-246-480-00 | 20k | 1-246-504-00 | 200k | 1-246-528-00 | 2.0M | 1-210-820-00 |
| 2.2 | 1-246-409-00 | 22 | 1-246-433-00 | 220 | 1-246-457-00 | 2.2k | 1-246-481-00 | 22k | 1-246-505-00 | 220k | 1-246-529-00 | 2.2M | 1-210-821-00 |
| 2.4 | 1-246-410-00 | 24 | 1-246-434-00 | 240 | 1-246-458-00 | 2.4k | 1-246-482-00 | 24k | 1-246-506-00 | 240k | 1-246-530-00 | 2.4M | 1-244-754-00 |
| 2.7 | 1-246-411-00 | 27 | 1-246-435-00 | 270 | 1-246-459-00 | 2.7k | 1-246-483-00 | 27k | 1-246-507-00 | 270k | 1-246-531-00 | 2.7M | 1-244-755-00 |
| 3.0 | 1-246-412-00 | 30 | 1-246-436-00 | 300 | 1-246-460-00 | 3.0k | 1-246-484-00 | 30k | 1-246-508-00 | 300k | 1-246-532-00 | 3.0M | 1-244-756-00 |
| 3.3 | 1-246-413-00 | 33 | 1-246-437-00 | 330 | 1-246-461-00 | 3.3k | 1-246-485-00 | 33k | 1-246-509-00 | 330k | 1-246-533-00 | 3.3M | 1-244-757-00 |
| 3.6 | 1-246-414-00 | 36 | 1-246-438-00 | 360 | 1-246-462-00 | 3.6k | 1-246-486-00 | 36k | 1-246-510-00 | 360k | 1-246-534-00 | 3.6M | 1-244-758-00 |
| 3.9 | 1-246-415-00 | 39 | 1-246-439-00 | 390 | 1-246-463-00 | 3.9k | 1-246-487-00 | 39k | 1-246-511-00 | 390k | 1-246-535-00 | 3.9M | 1-244-759-00 |
| 4.3 | 1-246-416-00 | 43 | 1-246-440-00 | 430 | 1-246-464-00 | 4.3k | 1-246-488-00 | 43k | 1-246-512-00 | 430k | 1-246-536-00 | 4.3M | 1-244-760-00 |
| 4.7 | 1-246-417-00 | 47 | 1-246-441-00 | 470 | 1-246-465-00 | 4.7k | 1-246-489-00 | 47k | 1-246-513-00 | 470k | 1-246-537-00 | 4.7M | 1-244-761-00 |
| 5.1 | 1-246-418-00 | 51 | 1-246-442-00 | 510 | 1-246-466-00 | 5.1k | 1-246-490-00 | 51k | 1-246-514-00 | 510k | 1-246-538-00 | 5.1M | 1-244-762-00 |
| 5.6 | 1-246-419-00 | 56 | 1-246-443-00 | 560 | 1-246-467-00 | 5.6k | 1-246-491-00 | 56k | 1-246-515-00 | 560k | 1-246-539-00 | | |
| 6.2 | 1-246-420-00 | 62 | 1-246-444-00 | 620 | 1-246-468-00 | 6.2k | 1-246-492-00 | 62k | 1-246-516-00 | 620k | 1-246-540-00 | | |
| 6.8 | 1-246-421-00 | 68 | 1-246-445-00 | 680 | 1-246-469-00 | 6.8k | 1-246-493-00 | 68k | 1-246-517-00 | 680k | 1-246-541-00 | | |
| 7.5 | 1-246-422-00 | 75 | 1-246-446-00 | 750 | 1-246-470-00 | 7.5k | 1-246-494-00 | 75k | 1-246-518-00 | 750k | 1-246-542-00 | | |
| 8.2 | 1-246-423-00 | 82 | 1-246-447-00 | 820 | 1-246-471-00 | 8.2k | 1-246-495-00 | 82k | 1-246-519-00 | 820k | 1-246-543-00 | | |
| 9.1 | 1-246-424-00 | 91 | 1-246-448-00 | 910 | 1-246-472-00 | 9.1k | 1-246-496-00 | 91k | 1-246-520-00 | 910k | 1-246-544-00 | | |

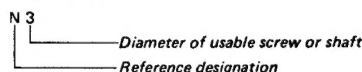
HARDWARE NOMENCLATURE

Screw:



Unless otherwise indicated, it means cross-recessed head (Phillips type).

Nut, Washer, Retaining ring:



| Reference Designation | Shape | Description | Remarks |
|-----------------------|-------|---|--|
| SCREWS | | | |
| P | | pan-head screw | binding-head (B) screw for replacement |
| PWH | | pan-head screw with washer face | binding-head (B) screw and flat washer for replacement |
| PS PSP | | pan-head screw with spring washer | binding-head (B) screw and spring washer for replacement |
| PSW PSPW | | pan-head screw with spring and flat washers | binding-head (B) screw and spring and flat washers for replacement |
| R | | round-head screw | binding-head (B) screw for replacement |
| K | | flat-countersunk-head screw | |
| RK | | oval-countersunk-head screw | |
| B | | binding-head screw | |
| T | | truss-head screw | binding-head (B) screw for replacement |
| F | | flat-fillister-head screw | |
| RF | | fillister-head screw | |
| BV | | brazer-head screw | |

| Reference Designation | Shape | Description | Remarks |
|----------------------------|-------|--|---|
| SELF-TAPPING SCREWS | | | |
| TA | | self-tapping screw | ex: TA, P 3 x 10 |
| PTP | | pan-head self-tapping screw | binding-head self-tapping (TA, B) screw for replacement |
| PTPWH | | pan-head self-tapping screw with washer face | binding-head self-tapping (TA, B) screw and flat washer for replacement |
| PTTWH | | pan-head thread-rolling screw with washer face | binding-head (B) screw and flat washer for replacement |
| SET SCREWS | | | |
| SC | | set screw | |
| SC | | hexagon-socket set screw | ex: SC 2.6 x 4, hexagon socket |
| NUT | | | |
| N | | nut | |
| WASHERS | | | |
| W | | flat washer | |
| SW | | spring washer | |
| LW | | internal-tooth lock washer | ex: LW3, internal |
| LW | | external-tooth lock washer | ex: LW3, external |
| RETAINING RINGS | | | |
| E | | retaining ring | |
| G | | grip-type retaining ring | |